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John Dean Caton

MISCELLANIES

BY

JOHN CATON, LL. D.

[illegible] OF ILLINOIS [illegible]
OF AMERICA [illegible] AND
[illegible]

BOSTON
HOUGHTON, OSGOOD AND COMPANY
The Riverside Press, Cambridge
1880

MISCELLANIES

BY

JOHN DEAN CATON, LL. D.

EX-CHIEF JUSTICE OF THE SUPREME COURT OF ILLINOIS; AUTHOR OF
"THE ANTELOPE AND DEER OF AMERICA" AND
"A SUMMER IN NORWAY"

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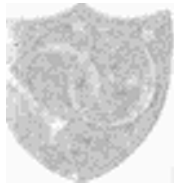
John Bean Eaton

MISCELLANIES



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sible, and when discovered I have promptly endeavored to correct them.

It is in the infancy of a state that the labors of the courts and of the bar are the most difficult and the most responsible. When I first became a member of this court we had but three volumes of Reports, now we have thirty. Then we had but few precedents by our own courts, and the responsibility devolved upon us to establish precedents for our successors. In this we have had the assistance and advice of a bar gathered from nearly every State in the Union, each of whom naturally felt a partiality for the rules prevailing whence he came. Hence few decisions were overlooked bearing upon any question presented. From these we have adopted those rules which we believed best and soundest.

During this period the wonderful advance in the arts and sciences has introduced such improvements as have, in many respects, changed the modes of doing business, and the relations among men, so that many new and difficult subjects for adjudication have been presented to the courts which we have settled to the best of our ability. But it would be presumption to assume that we have in all cases settled them in the best possible mode.

During my time with the old court and the new, I have sat upon this bench with eighteen different associates, and I am now happy to bear my testimony to the most cordial good feeling which has ever prevailed in the conference room. There have I contracted new friendships and cemented old, which will glow brightly in my memory while life shall last. All have evinced the deepest anxiety to arrive at correct conclusions, and could the secrets of the conference room be fully laid open, you would know that many of your important causes have been even more laboriously discussed there than they had been at the bar.

Courts of justice differ widely from the other departments of the government. In general their action affects members

of society individually and directly. They decide upon the rights of all, and all have an equal claim upon their industry and impartiality. They are for the good of all, and they must know no friendship. They are not political in their structure, — must know no party. Whenever the courts come under the influence of any party, either from fear or favor, — whenever they lend themselves to favor classes or individuals, then they will forfeit the confidence of the public, and sink into the lowest depths of degradation and contempt. A firm and upright judiciary may calmly contemplate the surges of party strife which may be raging around them, and pass by complaints, and even denunciations, without emotion; conscious of their own integrity, they may safely and serenely repose upon the assurance that they will be appreciated and sustained by a right thinking public. The approbation of good men is the good man's highest reward.

In taking my final leave of you, gentlemen, I cannot, and ought not to omit the expression of the deep gratitude I feel for the kindness, the respect, and the forbearance you have ever shown me. If I have succeeded in any measure as a jurist, to a very large extent is it due to the members of the bar for the learned and able advice which they in their places have given me. Whenever I have fallen into error or committed faults, you have seemed anxious rather to cover them up than to make them prominent, and delicately assist me in avoiding them in future. When I came to the bench we had a numerous and an able bar — but very few of whom I now see before me. Where are they now? Many have been called to other spheres of action, and to other responsibilities. The present Chief Magistrate[1] of the nation was for nearly twenty years of this time a prominent and leading member of this bar, whose voice was at every term almost daily heard in this hall, and always profitably. Others, alas! and many of them, have

[1] President Abraham Lincoln.

gone to that higher judgment seat where no errors are committed, and to which we are all hastening; but their places have been filled, and more, by a new generation, who now constitute a large majority of this bar, and who, I am proud to say, are well worthy of their predecessors.

Remember, gentlemen, that you belong to a very high and honorable profession. Be worthy of your high vocation, which is, to stand forth a shield to the innocent, protectors of the oppressed, and champions for the right. You are the advisers of this court, and upon you, I am sure, it may ever lean for assistance and support. Industry and the highest integrity are indispensable to success. Continue as you have begun, and you will prove worthy examples to those who shall come after you.

I cannot express my sensibilities at parting with my present associates. Long and anxious labors and weighty responsibilities have we for years shared together, each earnestly endeavoring to assist all in the discharge of duties. So has grown up among us a warm personal friendship, which has greatly lightened our labors. For my successor, the governor has selected a gentleman of eminent qualifications for the place, and I am sure this bench will be strengthened, rather than weakened, by the change.

At last, gentlemen, I go down from this high place with many regrets. I now hold my fifth commission on this bench. Twice have I held the position of chief justice, the last time for more than six years. Here have I labored more than two fifths of my whole life. Long habits and present associations and remembrances have struggled hard to dissuade me from the course which I have finally adopted, but I felt it my duty at last to yield, and other considerations have prevailed. I fully appreciate that this is a place worthy of any well-regulated ambition. A wholesome desire for an enduring fame may here find a theatre in which it may toil to a useful purpose, and with a well-grounded hope of attaining so desirable an end. I resign the great trusts

which have been reposed in me with the comfortable reflection that I have discharged them with fidelity, and with the utmost ability with which I have been endowed.

The Hon. W. H. Underwood responded in behalf of the bar, and at the close of his remarks the Chief Justice rose, and, taking his associate, Judge Walker, by the hand, said: "Mr. Chief Justice Walker, I resign my seat to you as my successor." After Chief Justice Caton had retired from the court, Mr. Underwood presented the following preamble and resolutions, which had been adopted at a meeting of the bar held the previous day: —

WHEREAS, The retirement of Chief Justice John D. Caton from the Supreme Court of this State presents a fitting occasion for the expression of the sentiments of the bar touching his personal and official conduct for a period of more than twenty years, therefore,

Resolved, That while, recognizing by his ability and eminent qualifications as a judge he has adorned the bench of the Supreme Court, by his urbane and courteous demeanor has won the highest esteem of the members of the bar, and by his uprightness, impartiality, and erudition the confidence of the people of the State, we regret the retirement of the Chief Justice, we unanimously tender to him the assurance of our continued confidence in his private worth, and official integrity and ability, and that we, in common with the people of Illinois, shall trust that, in whatever capacity he may be called to act, his public usefulness may remain unabated, and will rejoice in his happiness and prosperity to the end of his life.

Resolved, That the chairman present the proceedings of this meeting to the Supreme Court, and request that they be entered on the records thereof.

Chief Justice Walker responded for the bench, and directed that the resolutions and the remarks of Chief Justice Caton should be spread upon the records of the court.

II.

A LAWYER'S RETROSPECT.

REMARKS BEFORE THE COOK COUNTY CIRCUIT COURT OF ILLINOIS, JULY 26, 1871.

In the case of *Milward et al.* v. *The Western Union Telegraph Company*, argued before the Circuit Court, ex-Chief Justice Caton was counsel for the defendant, resuming for a single and the final occasion his place at the bar, after a lapse of thirty years. The circumstance recalled to his mind so many personal associations, that after he had closed his argument upon the case itself, with manifest feeling he addressed the court as follows: —

"I HAVE now finished what I proposed to say in reference to the case. Here our responsibility ends, and that of your Honor commences; but I will crave the indulgence of the court for a brief reminiscence. It is now more than thirty-eight years since I commenced my professional career in the little hamlet where this great city now stands. Its site was then covered with wild grass, or native and tangled shrubs, while the river was broadly bordered with aquatic vegetation, leaving a deep channel along its centre, of clear and wholesome water, which was used exclusively for culinary and drinking purposes. Our two hundred and fifty persons were sheltered in rude cabins or small dwellings, and our only streets consisted of winding tracks along the banks of the river or leading away to the interior.

Clients were then scarce, but as there were but two of us to do the business, the only rivalry between us was as to who could most zealously serve his client with the greatest courtesy and kindness to each other. The late Judge

Spring, who was then my social companion and my only professional competitor, has long since closed his professional career, and passed beyond the precincts of earthly courts, but not until he saw gathered around him a bar distinguished for numbers as well as for its learning. How great the change which these few years have wrought! How few are left of those who lived here then! Their numbers can be told on the fingers of a single hand. With what a throng are their places filled, among whom they are scarcely missed, except by a few old friends who knew them long ago! The village has grown into a great city, where hundreds of thousands are hastening with busy steps through the thronged streets, intent upon the accomplishment of individual enterprises, which aggregate into a great whole and make the wonder of the commercial world. As our profession must of necessity keep even pace with the other affairs of busy men, a long list must be told before its members can be counted.

This, then, was the only court of record to settle the suits of contending parties, and a single judge, in three days' session, could close the business of the year. Now, seven judges, in almost perpetual session, are unequal to the task. Judge Young was your Honor's first predecessor, and he here held the first court of record in which I ever appeared professionally. Governor Ford was then state's attorney in attendance, and also from abroad appeared Ben. Mills, whose smooth flow of eloquence exceeded that of any man to whom I ever listened; there were also William L. May, of Springfield, and James M. Strolle, of Galena. James H. Collins had now joined our ranks at home, and he, with Mr. Spring and myself, then represented in this court the Chicago Bar. Though their numbers were but few, many of them have filled large pages in the history of our State, and their names will long be remembered even outside our professional circle. I succeeded Judge Ford upon the supreme bench, when he was elected governor, less than ten

years after the time of which I speak, and I sat upon that bench with Judge Young, after he had served a term in the Senate of the United States; and, in 1846, I sat upon the bench which your Honor now occupies, in his place, when he was kept away by sickness. Of all these not one is left! I was the youngest of them all, and I stand here alone, the last representative of the court and bar of Chicago of thirty-eight years ago. Those whom I have named were young men then, full of glowing hope and ardent ambition which rapidly ripened into fruition. They filled their places honorably, and have passed away to their long account. It seems to me but as yesterday, when we all first met together in the unfinished loft of the old Mansion House, just north of where the Tremont now stands; aud yet the changes about us have been such, as, in other times and in other countries, centuries would not have accomplished. The great advance in the arts and sciences, which one might think had culminated in our day, have made this progress possible, so that only when memory spans the space between now and then does it seem so short; when the mind slowly and carefully retraces the way, noting but the important incidents strewn along the path, then it is that the road seems long. The years of patient and unflagging toil; the thousand obstacles met and overcome; the difficulties and uncertainties attendant upon every step of human progress; the hopes realized or broken; the ambition gratified or blasted; alternate success or failure which have left their record on the human mind, — all these tell us how long the way has been; and as advancing years slowly creep upon us, we feel less and less inclined, were the offer made us, to take the chances of another journey over the road of life, though the first may have been full of happiness, the memory of which alone is the sweetest joy, and though more than ordinary success may have crowned our efforts.

The incident to which I have referred may serve to explain why I have felt a desire, after a lapse of thirty years,

to appear again, and, probably, for the last time in this court in the simple capacity of a lawyer. Here I commenced my professional life. In this court I first appeared as an advocate. This was the first court of record which I ever addressed, and before it I first addressed a jury. The place, too, has its pleasing associations. Although for many years official duties required my residence in another city, yet Chicago was my first Western home, and has ever seemed more than half a home to me. The uniform kindness, cordiality, and support which I have ever received from her citizens, as well those who came after I left as those who were my neighbors before, have made me always feel at home here; and the respect and consideration which the bar of this city has ever manifested toward me have most keenly touched my sensibilities, and left an indelible impression on my mind. Again have I appeared in the Cook County Circuit Court, and have done the best I could respecting a client's cause. Again have I received a patient and attentive hearing, and now with gratified satisfaction I retire, deeply sensible of the indulgence shown me, wishing your Honor and my professional brethren long and happy lives, crowned with honor and with usefulness.

III.

THE DEATH OF LINCOLN.

ADDRESS TO THE SUPREME COURT OF ILLINOIS UPON PRESENTING RESOLUTIONS OF THE BAR, MAY 3, 1865.

The day before the burial of President Lincoln, at Springfield, the Supreme Court met to pay their testimonial of respect to the memory of the Chief Magistrate. The members of the bar, of which Mr. Lincoln had so long been a member, had prepared resolutions, and had requested ex-Chief Justice Caton to present them to the court. The court being opened, the full bench present, Judge Caton rose and addressed it as follows: —

MAY IT PLEASE YOUR HONORS, — The solemn duty has been assigned me of formally announcing to this court the death of Abraham Lincoln, and to present to the court the resolutions which the bar has adopted expressive of our appreciation of the deceased, and of our bereavement at his loss, and to ask that they be spread upon the records of the court.

These are the

RESOLUTIONS OF THE BAR.

"Being assembled to express our grief for the sudden death of the President of the Republic, to mourn for the loss of an eminent member of our profession, and to pay a merited tribute of respect to the memory of Abraham Lincoln, we, his brethren of the bar, do

Resolve, first. That we deeply deplore the irreparable loss which the nation has sustained in this trying hour of its history, by the melancholy death of its distinguished Chief Magistrate. That it is with the most profound sorrow that we part with a brother mem-

ber of the bar who has so long occupied an exalted position among us, — one whose great ability, unblemished integrity, and kind and genial nature have commanded so much of the respect, admiration, and love of our profession, and that with the most sincere grief we mourn for the death of one whose inestimable social qualities have so endeared him to us as a man.

Second. That a copy of these resolutions be presented to the Supreme Court of the State of Illinois, now in session, with a request that they be spread upon its records, and that a copy be sent to the Secretary of State of the United States, and another copy to the family of the deceased; and that to the members of his family we tender our heartfelt sympathy in their sad affliction, and our kindest and best wishes for their future prosperity."

In the performance of the sad duty, both precedent and propriety will justify me in adding a few words, though but a few, to what is expressed in these resolutions. In any other position I might be permitted to speak of Mr. Lincoln as he is known to every inhabitant of this broad land, and as he will be known in history in all future time — as President of the United States.

Little more than four years ago he was, by the voice of the American people, taken from among us at the bar and placed over this great nation. In administering the affairs of this government, he has, undoubtedly, displayed a very high order of ability. At the very commencement of his administration a great rebellion broke out, and presented the question whether the light of this Republic, which had for a few years shone so brightly, was but the brilliant flash of a meteor to illuminate the political horizon of a civilized world for a moment, and then to go out in darkness, or was the fixed shining of a luminary which should point out to future ages the pathway to liberty, prosperity, and happiness. With the aid of great men, whose names history will write on the same page with his own, and the support of a patriotic people, he had put down the rebellion, and already saw the angel of peace arising " with healing in his wings "

to bless his native land, when he was struck down by an assassin's hand. He is mourned by a whole nation as few have been mourned before him.

But to others we must leave the pleasing task of speaking of him as the chosen ruler of the nation. While poets sing his praises, and orators proclaim his greatness as a public man, it becomes us, his professional brethren, who know him better than strangers could know him, to speak of him as we knew him in his profession. For nearly thirty years was Mr. Lincoln a member of this bar. But few of us are left who preceded him. From a very early period he assumed a high position in his profession. Without the advantage of that mental culture which is afforded by a classical education, he learned the law as a science. Nature endowed him with a philosophical mind, and he learned and appreciated the elementary principles of the law, and the reasons why they had become established as such. He remembered well what he read, because he fully comprehended it. He understood the relations of things, and hence his deductions were rarely wrong from any given state of facts. So he applied the principles of the law to the transactions of men with great clearness and precision. He was a close reasoner. He reasoned by analogy, and usually enforced his views by apt illustrations. His mode of speaking was generally of a plain and unimpassioned character, and yet he was the author of some of the most beautiful and eloquent passages in our language, which, if collected together, would form a valuable contribution to American literature. Those who supposed Mr. Lincoln was destitute of imagination or fancy know but little of his mental endowments. In truth, his mind overflowed with pleasing imagery.

His great reputation for integrity was well deserved. The most punctilious honor ever marked his professional and private life. He seemed entirely ignorant of the art of deception or of dissimulation. His frankness and candor

were elements in his character which contributed to his professional success. If he discovered a weak point in his cause, he frankly admitted it, and thereby prepared the mind to accept the more readily his mode of avoiding it. I venture the assertion, that no one ever accused him of taking an underhanded or unfair advantage in the whole course of his professional career. He was equally potent before the jury as with the court.

His personal characteristics were of the most pleasing kind. His heart was full of benevolence, and he was ever prone to put the most favorable construction upon the frailties of his fellow-men. His hand was open to relieve the unfortunate, and his efforts were at the service of those in distress. By his genial nature he enlivened every circle of which he was a member, where he was ever welcome. Who of this bar does not remember him as of yesterday, when he was among us relieving the hard labors of the profession by his enlivening presence? He will ever be remembered as one of our brightest ornaments, whose practice reflected honor upon the profession. If these elements of character inspired love for him as a professional brother, how much must they have endeared him to his own domestic circle — around his own fireside? If we feel his loss as irreparable, where but in God can be found the consolation for his loss as a husband and a father? Those bereaved ones may well look to us, who next to themselves knew him best of all, for that deep and abiding sympathy which tends to soften the most poignant grief; and they will not look in vain. Nor to his professional brethren alone may they look for sympathy. With them and us a nation mourns his untimely end. I may say, without the least exaggeration, that humanity and civilization throughout the world will feel the shock which has draped our nation in the habiliments of woe.

I move the court that the resolutions of the bar be spread upon its records, that those who come after us may

read our appreciation of our departed brother, and that a copy of the record under the seal of the court be furnished to the family of the deceased, that they may know of the deep sympathy we feel for them in their great bereavement, and that a like copy be furnished to the Secretary of State of the United States, that all may read the testimony borne by the professional brethren of Abraham Lincoln.

Judge Caton then presented the resolutions; Mr. Justice Breese responded, and the Chief Justice then adjourned the court until after the funeral, as further mark of respect to Mr. Lincoln's memory.

IV.

GENERAL W. H. L. WALLACE.

ADDRESS IN RESPONSE TO RESOLUTIONS PRESENTED BY THE BAR TO THE SUPREME COURT OF ILLINOIS, UPON THE DEATH OF GENERAL W. H. L. WALLACE, APRIL 25, 1862.

The death of General Wallace, from wounds received while gallantly leading a division at the battle of Pittsburg Landing, robbed the country of a brave soldier and deprived the Bar of Illinois of an able and honored member. The Hon. N. H. Purple presented to the Supreme Court, in session at Ottawa, resolutions of respect which had been adopted by the bar, and the following response was made by Chief Justice Caton: —

THE court receives the announcement of the death of General Wallace with emotions for the expression of which we find no adequate words. In his death the bar has lost one of its brightest ornaments, the court one of its safest advisers, and our country one of its ablest defenders. His whole professional life has been passed among us, and we have known him well. All your words of encomium are but simple justice, and we know they proceed from the deepest convictions of their truth.

All his instincts were those of a gentleman; all his impulses were of a noble and lofty character; his sensibilities refined and generous. He was certainly a man of a very high order of talent, and he was a very excellent lawyer. By his industry he studied the law closely, and by his clear judgment he applied it properly. He did honor to his profession; it is meet that his professional brethren should honor his memory. Scarcely a year ago he was with us, engaged in a lucrative practice, — the ornament and delight

of a large circle of friends, and enjoying the quiet endearments of domestic life, — loving and beloved by a family worthy of him, now made desolate.

At the very first call of his country for defenders, he abandoned his practice, he withdrew from his associates and friends at home, tore himself from the domestic circle, and pledged his energies and his life to the vindication of his country's flag, which had been dragged down and dishonored by rebel hands at Sumter, — to the defense of that Constitution and those laws, the maintenance of which is indispensable to national greatness and happiness. For these he fought; for these he died. For myself, I may say he was my near neighbor and my dear friend. He honored me with his confidence, and disclosed to me fully the patriotic impulses which led him to abandon all in defense of his native land. If he was an able lawyer, so he was an able commander. If we mourn him as a departed friend and brother, so does the country mourn him as one of her ablest generals gone. With the glad news of victory came the sad lament of his death; our gladness was turned to mourning. So it ever is in this sublunary world, — with all our joys are mingled strains of sorrow. Happiness unalloyed is reserved for that brighter and better world promised to those who act well their part on earth, into the full fruition of which those who knew him best doubt not he is accepted.

The resolutions which have been adopted by the bar will be entered upon the records of the court as a perpetual memorial of our appreciation of the worth of the late General Wallace, and the clerk will furnish a copy of them and a copy of this order to the widow and family of the deceased, and out of respect to his memory the court will now adjourn.

V.

THE POSITION AND POLICY OF THE DEMOCRATIC PARTY.

A LETTER TO HON. HORATIO SEYMOUR, GOVERNOR OF THE STATE OF NEW YORK, DECEMBER 18, 1862.

Judge Caton, at the breaking out of the late war, was, as he always had been, a member of the Democratic party; he had been for years a friend of Judge Stephen Arnold Douglas, but since his elevation to the bench of the Supreme Court of Illinois had withdrawn from an active part in politics. In principles he was a War Democrat, and as such an earnest defender of the Union; he was opposed to what he judged to be usurpation by the Republican administration, and in conversation with Governor Seymour presented considerations which that statesman, in his appreciation of their force, desired to see reduced to writing. Judge Caton accordingly addressed him the following letter as a private communication; but afterward reluctantly consented to its publication. It was at the time widely circulated as a political tract, Mr. Thurlow Weed, especially, lending all his influence to its distribution.

HON. HORATIO SEYMOUR: —

Dear Sir, — As you requested, I will set down some suggestions which I made to you orally a few days since, in reference to western sentiments on the present condition of the country, with some reflections upon the late elections.

You are undoubtedly correct that the northwest will never consent to a separation of the Union, leaving the lower Mississippi in a foreign jurisdiction. Our interests are agricultural, and upon a market for our products depends our well being — I might almost say our existence. Before the war we supplied the plantations of the south with their horses and mules, their corn and their bacon. This plantation

market consumed most of the products of the counties bordering upon the Mississippi and its tributaries, and any surplus found its way through that great river to the Atlantic cities and foreign countries. By the war we have lost this market and this outlet, and our products, which formerly went south, have been thrown upon the northern transports and northern markets, overloading the former and glutting the latter. As an inevitable consequence, while money has depreciated nearly one third, the prices of our great staples in the hands of our farmers have remained stationary, or have receded in some instances more than half. At the last presidential election, on the Ohio River mules were worth from one hundred and twenty-five to two hundred and twenty-five dollars per head. Now our graziers cannot realize more than from sixty-five to eighty dollars per head, notwithstanding the great consumption by the army; and horses have depreciated in nearly the same ratio. If other portions of the country have found means to make money by the war, to the western agriculturist it has proved an unmitigated burden, which can only be relieved by a restoration of peace and of the Union. The former without the latter would render permanent that which we now look upon as but temporary. Hence has the west fought, and so will she fight, not for the desolation of the south, and the final destruction of her plantations, but for the restoration of the Union. Hence has Illinois furnished more than ten thousand troops above her quota. If a draft has been necessary in any portion of the west, it has not been where the influence of this plantation market has been directly felt. I repeat, we can never consent that the lower Mississippi shall pass into a foreign jurisdiction.

I agree with you that the radical Abolitionists prefer a separation to a restoration of the Union as it was with all the rights of the States as they exist under the Constitution, including slavery; and just so soon as they are convinced that a majority of the people of the north and of Congress

are determined to admit a peace upon the old basis, they will labor for a separation. They seem determined to invent and practice every provocation possible upon the south, in order to produce and continue a degree of alienation which shall prevent them from embracing the tender which the conservative north is ready to offer them, to return and enjoy the protection of the Constitution unimpaired. These provocations, in connection with the known state of feeling pervading the whole community south, render any hope that they will embrace the Democratic offer to return and resume the *status quo ante bellum* entirely futile at the present moment. They will, with bitter contempt, spurn this offer now, let it come from whom it may. Such is the present state of feeling in the southwest as well as in the southeast. Victories must be won before they will listen to reason from any party and accept reunion on any terms. Were the Democrats in power to-day, they must win victories before they could save the Union. If these victories are won while the Abolitionists rule, may not the south accept peace from us when we attain the control, quite as readily as if won under Democratic auspices?

What shall be done in this contingency? The answer of ninety-nine in the hundred of those who voted the Democratic ticket at the October and November elections is and will be: The war must be prosecuted earnestly and to the last — not to crush and conquer the south, but to crush and conquer the rebellion. If a ten years' war is necessary, rather than give up the Union they accept it — sorrowfully, it is true, but earnestly. We hope and believe that whatever the fortunes of war may be this winter, and especially if success shall attend our arms, and if Mr. Lincoln can be brought under Democratic influences, or even if the south can be brought to believe that conservative principles have acquired such an ascendancy in the north as to admit a peace on the old basis, and protect them in their fair constitutional rights, then peace is possible after the fourth of March, when the

new Congress will come into being. To render this possible — to excite a reasonable hope that the south will return to the Union on the old basis — it is indispensable that they should be disabused of the opinion that the Democratic party is a peace party on the basis of separation. Whatever this or that Democrat may think or feel about the prosecution of the war, certain it is that a vast majority of the old Democratic party — that is to say the Douglas portion of it, and all of those who have formerly voted with the Republicans, but at the late elections voted with us, at least in the west, and no doubt the same is true in the east — are fixed in the determination that the war must be prosecuted till the rebellion is put down, or till those in revolt shall submit to the government of the Constitution. Indeed, this follows as a necessary consequence upon the determination not to submit to a dismemberment of the Union — which, as before stated, must be looked upon as a settled question, at least in the west.

When the rebellion was inaugurated, its promoters professed to believe, and no doubt most of them did believe, that they would not only meet with sympathy, but with material support, from the Democratic party of the north; and but for this belief it is doubtful if they could have deluded their people to such an extent as to have secured their acquiescence in the revolt. All now see how fatal was that delusion. They should be told in time that the hope that the late elections are an expression of sympathy for secession is a delusion equally great, and must prove equally fatal. The northern Democracy stands now where it has ever stood. It will support at all hazards the integrity of the Union, while it will guarantee to every portion of it all the rights and all the privileges stipulated in the Constitution. To this extent and for these purposes the Democratic party must be considered a war party, and in its support and prosecution it will vindicate its ancient renown for steadiness of purpose — for pursuing its object with a calm and deter-

mined energy which evinces its faith in its principles, and which ever has secured, and ever will in the end secure, its triumph. While we must prosecute the war to the end proposed, we will do it without malice and without vindictiveness, and upon those humane and Christian principles which should illustrate the civilization of the great Republic, and especially when we are warring with our own brethren for the sole purpose of hereafter living with them in peace and amity. The taunt of those fanatics who are blinded by rage and the imaginary wrongs of the negro, that we would conduct the war "with kid gloves" and "so as not to hurt the enemy," shall not drive us back to the barbarism of the dark ages, or compel us to a war of extermination instead of reconciliation. Every act of kindness and mercy opens a new avenue to reconciliation and peace; every act of brutality and barbarity closes a door leading to these results. Acts of brotherly love beget fraternal feeling; acts of cruelty and oppression and injustice lead to alienation, retaliation, and revenge. While we shall firmly hold the sword in one hand, and use it too with determination and resolution, the other must always be open with the proffer of peace and friendship so soon as our opponents shall return to their allegiance to the Constitution. It is due to the south, it is due to the north, it is due to the world, that the matured and fixed determination of the Democratic party should be known and thoroughly understood on this subject. It is due to the south, that they may not cherish the delusive hope which would persuade them that the late elections mean that they may go in peace and destroy this government. It is due to the north, that those who have come to our help, for the purpose of bringing the government back within the restraints of the Constitution, may know that they have not been contributing to the success of the rebellion and the destruction of the government and the Constitution. It is due to the world to know that our late triumphs are not an invitation to intervention, or an

evidence of division among the people upon the propriety of the prosecution of the war for the restoration of the Union.

The readings or explanations of the late Democratic successes have been various and opposite. By the Republicans it is said by these elections the people have condemned the tender mode in which the war has been prosecuted, although this is directly opposed to their position before the election. In Europe they were a condemnation of the war and a vote for separation — adopting the Republican theory during the canvass. The south is silent on the subject, awaiting events. Now, the true mode of understanding the meaning of these elections is to read their antecedents: not what the Republicans or Abolitionists said of us, for that would sustain the foreign explanations; but what did our friends say? What did our papers and our speakers say? What did the party proclaim as its principles, to the support of which it invited and claimed the suffrages of the people? These principles were sustained by the popular vote, and these tell with unerring certainty what these elections mean. Did any representative speaker, or did any standard paper, advocate a dissolution of the Union or a peace upon the basis of separation? Our enemies said this of us; but we denied it vehemently, east, west, and everywhere. They knew, and we knew, that a conviction of these charges was our certain defeat. All know now, and knew then, that no anti-war party could succeed with the people; that the popular vote could only be secured upon the war platform; and the only difference which we admitted or recognized regarded the principles and purposes for which the war should be waged. We all insisted, — papers, orators, and conventions, — and proved, too, that our enemies were prosecuting the war for unconstitutional purposes and by unconstitutional means; that the Emancipation Proclamation was unconstitutional; and that arbitrary arrests and the suspension, or rather suppression, of the writ of *habeas corpus* by the Executive and his subordinates was equally a viola-

tion of that instrument. It was upon these measures that we took issue with our opponents, and not upon the prosecution of the war, and upon these issues the popular verdict has been rendered. Both parties went to the country, admitting and advocating the propriety and the necessity of prosecuting the war. The whole country then — both parties — advocated war. There were individual exceptions, no doubt, on both sides, but they entertained their opinions in silence and voted for that party which approached nearest their views. There were, no doubt, some few who voted with us who have ever been disgusted with the war, who have ever sympathized with the rebellion, and think the south has a right to separate and go in peace, but they are very few. There are many more Abolitionists who feel that the south can never be conquered but by extermination, a proceeding which the history of the world shows to be impossible; and that a prolongation of the war will insure Democratic ascendancy, and result in a restoration of the Union as it was under the Constitution as it is, and hence they are for a separation and a peace, at once, which they deem preferable to the old Union. Neither party countenanced these extreme views; to have done so would have insured certain defeat.

Where, then, did we get our votes? There were not enough old Democrats to give us the victory. We must get, and did get, accessions from the Republicans, — from those who voted for Mr. Lincoln, who helped to place the present administration, including the Congress, in power. How did we get these votes? Why did they leave the Republicans and come to us? It was because the Republican party, the administration, ceased to represent their views. They disapproved, it is true, but still tolerated, arbitrary and illegal arrests, perhaps because the Confederate government did the same thing, in a most arbitrary manner, with Union men in the south. But it was the Proclamation which produced the revolution in the north, — a peaceful and a con-

stitutional revolution. The process of reasoning which brought to our ranks such accessions of patriotic men, and will bring to us many times more in the future, was not uniform among those who deserted the opposite party and came to us; while all were influenced by substantially the same causes. As the human mind differs in different men, so will men reason differently from the same facts while arriving at the same result.

As for some, if not by far the greatest proportion of our accessions during the late elections, they saw that in his inaugural address Mr. Lincoln had proclaimed that he would maintain the Constitution and not violate it; that he had approved most cordially the Crittenden resolutions passed at the special session in July, 1861; that he had, in fact, disapproved of the confiscation law, and finally signed it with great reluctance and virtually under protest. All approved of his Greeley letter as showing that he was prosecuting the war only for the restoration of the Union. He had revoked the Fremont and Hunter orders professing to free the slaves in their respective departments, and had removed both these generals from their commands; and finally, in his answer to the Chicago Clerical Committee, he again publicly committed himself to a conservative and constitutional course, and had, by most unanswerable arguments and illustrations, pointed out the danger and the folly of the course which they urged upon him. Many of these old Lincoln men — the old conservative Webster and Clay Whigs, who constituted the conservative element of the Republican party — believed, and still believe, that Mr. Lincoln had been honest and truthful in these professions, and faithfully represented his own real convictions, and the principles upon which he desired to conduct his administration and to prosecute the war. These men saw with surprise and consternation his Proclamation of the 22d of September, only ten days after his answer to the Chicago Committee, before whom he had so nobly vindicated himself. How was this to be accounted

for? They believed still in his truth and proverbial honesty. They did not believe that he had been merely acting a part falsely, that he might the more securely adopt the radical measures of the wild fanatics who had been howling around him and embarrassing and abusing him from the very commencement of his administration, but they thought that his firmness of purpose had given way. He had yielded to a pressure which a Jackson would have defied but which he could not resist. Of this pressure he had often complained, sometimes publicly, oftener in private. To the Border-State delegation particularly had he complained of this pressure, and intimated that it was backed by the threat of defection and desertion by those whose support he could not spare. They saw, the whole world saw, whence this pressure came. All the northern States were in the control of one party. There was not one Democratic governor, not one Democratic legislature to the members of which he could look for support and relief. All were Republicans, and most of them of a radical and violent character. Many of them were bold, bad men, who would scruple at nothing to attain their ends, even to the overturning of the government, and a daring usurpation. They saw that upon such men he was entirely dependent for his army if not for his treasury.

At the commencement of the war he consented to the plan of raising the volunteer forces through the state executives, and allowing them to appoint all the regimental and company officers. At this juncture there were three hundred thousand volunteers assembled and organized in these States, held and controlled by the state governors, and commanded by officers appointed by them and still subject to their military orders as their superior officers. Nearly if not quite all of these governors were clamorous for radical measures, — for the Proclamation, — a measure which they professed to believe would crush the rebellion and end the war directly, and that without it there was no hope of success.

Here was the pressure. Here was a visible, tangible power sufficient to overturn the government and hurl Mr. Lincoln from the presidential chair, — a measure which we have every reason to believe was actually contemplated, at least by a portion of these state executives, and who shall say that it would not have been actually accomplished had the President not finally yielded? Then there would have been no peaceful October and November elections. The conservatives would then have had a double task to perform and would have achieved a double victory. True, he resisted and complained till the meeting of the governors at Altoona was about to assemble and give shape and unity to this mighty force, and then who shall say for himself that he would not have yielded? No doubt there are men who would not have given way to this threatening, crushing pressure, but they are the men who would never have allowed this combination against the Government and the Constitution to have assumed such vast proportions.

Here were facts which have already become history, and these are the constructions given to them by at least a portion of the conservative Republicans who, with Mr. Lincoln himself, had been devout followers of Henry Clay and Daniel Webster, and who believed that Mr. Lincoln told the truth when he said that at heart he was opposed to the violent doctrines of the Proclamation; and they firmly believed that he yielded his own judgment and deserted his own cherished policy under this almost resistless pressure. They believed that the Abolitionists had, with violent hands, seized him, and demanded of him the Proclamation and a change of policy, on pain of deposition. They saw there was no way of wresting him from this violent grasp, of disenthralling him from the meshes in which they had entangled him, that he might conduct the government and prosecute the war upon constitutional principles, and for constitutional ends, but in the success of the Democratic party.

Thus reasoned a portion, but not all, of those who had become disgusted and alarmed at the new policy so suddenly inaugurated at Washington. Others, and there are no doubt many of them, believed that Mr. Lincoln had at heart been in deep sympathy with the most radical from the beginning, and had only affected moderation as a matter of policy. When they looked back and remembered all he had said and done, they could see this radicalism cropping out on many occasions, as when he received and countenanced Wendell Phillips; they noted many other indications equally suggestive, and upon a review of his writings and sayings, designed to create an impression of a conservative purpose, they found certain reservations and qualifications indicating a predetermination to adopt the radical policy as soon as he could do so safely. They now believed that while he had "held the word of promise to the ear," he designed "to break it to the hope." This class of men left him in disgust, for they had lost all faith in his integrity.

Again, there were others whose attention was arrested principally by the imbecility of the administration. While it was obstinate it was weak. It was incapable of comprehending the magnitude of the rebellion and the resources and the endurance of the south, and was utterly unable effectually to use the vast resources placed in its hands so as to produce any adequate results. They believed that the President was not a judge of men nor of things; that he could neither conduct the war himself, nor comprehend the capacity of others to conduct it; that the whole history of the administration was a combination of obstinacy and vacillation. The Proclamation as a war measure completed their disgust, and destroyed their last hope in the ability of the administration to prosecute the war to a successful issue. It was mere child's play on a grander scale than was ever before exhibited in the history of the world. They felt that the interests, nay the life, of the nation were wickedly trifled with; and that the time had come, if the coun-

try was to be saved at all, for the great mass of the people — whose servants our rulers are, whose interests are committed to their hands, whose country and whose government it is that is to be saved or lost — to band together under some form, some organization, and cause such a party as by its numbers and influence would make itself heard and heeded at the seat of government. The only way to do this was for all the conservative men of the nation to rally around the Democratic party.

It is not my purpose to express an opinion as to which was nearest right; but by whichever of these various motives or considerations the Republicans who came to our support were influenced, all agreed in the last conclusion. All saw that the Democrats were as earnestly engaged in the prosecution of the war as was Mr. Lincoln himself. They saw that no party in the history of this or any other country had ever shown more disinterested patriotism than had been exhibited by the Democrats since the breaking out of the rebellion. Before the smoke of the political battle of 1860, by which Mr. Lincoln was placed in power, had cleared away, a civil war was inaugurated, which had been provoked and induced, though certainly not justified, by the wild fanaticism of the very leaders of the party which had placed Mr. Lincoln in power, and Democrats were called upon to go and shed their blood and expend their substance in a war which they believed might have been avoided by a proper conciliatory course, such as they had recommended, but had been treated with contumely by those in power. But notwithstanding all this, the Democrats had shut their eyes to all that had gone before, and hushed the involuntary murmurings that the war was needlessly provoked by that wild fanaticism which had just defeated them at the polls, and they had rushed to the ranks under Mr. Lincoln, only remembering that their country and its Constitution were in danger. These conservative Republicans had witnessed all this and they appreciated it.

They saw that the Democrats had come up to the support of the country even more cheerfully and earnestly than had their political opponents, in whose hands was all the patronage of both the civil and the military administration. All could see that the Democrats had boldly fought and freely bled from no sordid motives, — to maintain no party ascendancy, but solely to maintain the Union and the Constitution.

When they saw all this, the conviction was forced upon them that to the Democratic party alone they must look for the salvation of the country and the restoration of peace and the Union. They found in the Democratic party alone those principles for the conduct of the war which Mr. Lincoln had always maintained, or professed to maintain, until he was forced to abandon them, as some of them believed, against his own settled convictions of right and policy. Thus alone could he be enabled to return or be forced back to his own conservative policy, which afforded the only hope of an honorable termination of the war, a restoration of the Union, and a vindication of the Constitution. Seeing all this, they could not hesitate to abandon their old political associates, who had already abandoned the principles upon which the war had hitherto professedly been conducted, if not the president of their choice, and ally themselves with the Democrats.

This is the true explanation of the source from which the votes came, and why they came, which gave us the victory and produced this great political revolution.

It is undoubtedly true, that but a small portion of the conservative Republicans who are opposed to this wild and destructive radicalism of their Abolition leaders, which now reigns supreme in the Cabinet and in Congress, abandoned them and came to us during the late canvass. Indeed, only the most reflective and sagacious of them were prepared to do so, on the spur of the moment as it were. Were the election to be repeated to-morrow, ten would

vote with us now where one did in November. The persistent and envenomed abuse of Democratic loyalty by those political papers and orators, that alone they were in the habit of reading and hearing, induced many actually to doubt whether the Democratic party, if once in power, would sustain the government in the prosecution of the war to restore the Union and vindicate the Constitution; while others had not sufficiently analyzed their own feelings, in view of the altered and peculiar state of things, to enable them to break away from old names and old associations, and to overcome old prejudices so far as to allow them to vote the Democratic ticket. But, thanks to the enlightenment of the American people, enough saw the truth and acted upon it to overthrow those dangerous men whose manifest and even declared object is to overthrow the Constitution of their country, and who will, in history, stand side by side with the leaders of this rebellion. Posterity will be divided upon the question as to which are the wickedest and which the greatest traitors.

The true course of the Democratic party in the future is manifest. We must walk in the light of the past. If we would maintain the ascendancy already attained, and augment our ranks by the accession of those Republicans who are disgusted and alarmed by the radical policy of the Abolition leaders, and who desire to prosecute the war by constitutional means and for constitutional ends, we must pursue a course alike dictated by patriotism and by policy. We must heartily and cordially live up to our professions during the canvass. We must show no lukewarmness or hesitancy in sustaining or prosecuting a war, which, if abandoned by the people, must result in a dismemberment of the Union, the destruction of the Constitution, and a disgrace to this people that will attach to them and their posterity through all time. A dissolution of the Union once admitted, — a destruction of the Constitution once effected, — then this community of States will be resolved into its origi-

nal elements, and who can foretell where will be the end? There never was a clearer light shining before public men than that which illuminates the way in which we should walk. We may pursue a course now which will draw to our party all the reflective, substantial conservatism of the nation, by the aid and support of which we shall be enabled to wrest Abraham Lincoln from the desperate hands of those who are bent on the destruction of the Constitution and the government, and to take the lead of public affairs, and finally restore the country to peace, unity, and happiness. Or we may, by another course, repel from us those who have now come to our help and given us the victory, as well as the great mass of the Democrats themselves, and leave the party literally annihilated, and with it the last hope of the country blasted.

VI.

THE GROWTH OF THE LAW.

AN ADDRESS DELIVERED AT HAMILTON COLLEGE, CLINTON, N. Y., JULY 15, 1868.

The western alumni of Hamilton College, having provided the funds for the erection of a library hall in their college, invited Judge Caton to deliver the presentation address. He was not a graduate of the college, but his early years had been passed under its shadow, and the silent influence of its walls had been deep in his character and plans. The college, moreover, had bestowed upon him the degree of Doctor of Laws; and there was, therefore, a special fitness in his accepting the task laid upon him. He spoke as follows: —

AFTER long years of absence, filled with the trials and the vicissitudes of life, whether successful or unsuccessful, we return to the scenes of childhood with emotions indescribable. Objects long forgotten rise up around us, each with a tale of pleasure or of pain. They remind us of our early efforts, of our little triumphs, and of our many pleasures. We forget the intervening years, with all their varied incidents, and, as in a dream, are transported back to that time when a trifle was a mountain of trouble, a toy was a fountain of joy. But with those even whose cares commenced almost with infancy, and who early knew privations, the period of childhood is the time when happiness predominates; hence are the scenes of childhood and the memories of early years so pleasing. In truth there is no wide difference between the joys and the griefs of the children of affluence and the children of indigence. The latter surely have as many hours of pleasure, and no more moments of pain, than the former. The improvised playthings of the one are

as gratifying as the finished toys of the other. The sorrows of childhood are generally transitory. They flit by, leaving scarcely more trace than the shadow of the passing cloud, while juvenile joys leave impressions like sunlight pictures, passing before us in after years like a pleasing panorama of by-gone scenes. The green, wild lawn where we played our little sports; the old, dark wood whose shade we sought; the apple-tree whose fruit we gathered, "are still to memory dear," though changed they may be, or even gone, some of them, forever; enough is left as it was in the sunny time of childhood to revive within us the record of the past. The most pleasing and the most lasting of all these memories are the reminders of parental love. If some of us cannot remember a father's face and a father's voice, the memory of a mother's kiss and of a mother's blessing may still glow warmly in our hearts, whose brightness time or change shall never fade. Surely it is no unmanly weakness, nor beneath the dignity of age, to be for a moment a child again.

From childhood we pass to youth, and still the tale is much the same. Though cares appear and responsibilities arise, so do rational enjoyments and innocent pleasures. Still local objects carry with them their associations, and remind us when young ambition came silently along and whispered in our awakened ears a hope and promise of a future, new and magnified in every lineament. Then comes the stern resolve, the iron will, to surmount all difficulties, to overcome impediments, and to accomplish success. For myself, I may say that these hills and woodlands, these college halls and pleasant walks, lift up before me the picture of the past, in beholding which I live over again my youthful days. If they remind me of many days of weary toil, they tell me also of young hopes so bright that they chased away all fears, and of young resolves so deep, so firm, as permanently to shape the course of after life.

Forty years have made some changes, it is true, yet many here can testify they have been but few; at least, so they

seem to one who has spent most of the intervening time in the rapidly changing scenes in, what was then, the far-off West. I look around me and it seems but yesterday since I was here a boy. Then, as now, this hill was crowned with academic halls, through whose portals passed and re-passed, continually, teachers and students, inspiring by their very presence a love of learning. The humblest boy could stay his labors and drink in the inspiration of the scene. In thought, at least, he could pass those doors and listen to the lessons told, and now may bless this seat of learning as the mother of his hopes.

More than thirty-five years have rolled along and are buried in the tomb of time, since, with aching brow but unfaltering step, I turned my back upon scenes so graven on the youthful heart, and bent my way towards the setting sun, where lived no friend to aid, to counsel, or encourage me. If for a time a cloud of gloom hung along the road, bright stars of hope soon broke through the pall and dissolved the disheartening shadows, and then a halo of inspiring light lit up the western horizon and beckoned me onward with a promise of success.

I believe but one who taught here then is left to hear me now.[1] In early manhood his graceful form and elastic step gave promise that time should deal gently with him, and that toil should nourish rather than destroy his faculties. The fruits of his labors have ripened in every field of usefulness. His name is spoken with reverence and affection wherever two or three are met together who have profited by his instruction. How pleasing the consciousness of such usefulness! How fragrant the memory of such benefits!

We may be permitted to speak the names of those who live here only in memory and in their works that live after them. Affection and gratitude constrain me to allude to one who then had lately commenced his career of work in

[1] Rev. Simeon North, D. D., LL. D., Professor of Greek and Latin, 1829–1839; President, 1839–1857.

this institution. His early promise was richly fulfilled by his ripening accomplishments, till he was cut down in the vigor of manhood. No one could be better qualified to win the hearts or to inspire the respect of the young. His influence, mildly and quietly exerted, was ever marked and most beneficial. Learned himself, he was eminently qualified to impart instruction. His virtuous life and excellent example were a perpetual admonition to all around. Of all those who then taught here, to him alone was I personally known. He knew of my aspirations, and sympathized with my early struggles. He cheered me by his encouragements, and aided me with his counsels. Like an elder brother he led me by the hand; if though but a little way, still far enough to see the path before me. Many with me will bless the memory of the late professor, MARCUS CATLIN.

The struggles of manhood differ widely in magnitude and importance from those of youth, but the experiences of the latter are of the greatest importance to the success of the former. They necessitate habits of thought, and systematize and discipline the mind. They inure one to efforts, and enable us to bear with equanimity and without despair trials and disappointments. At least, there are many who can appreciate the advantages of this early discipline, and acknowledge that it has, in some measure, compensated for the want of other early lessons which cultivate and discipline the mind, and enable one with more ease and grace, and with more vigor too, to accomplish those tasks which are imposed upon all who aspire to occupy the higher walks of life. But they cannot fully compensate for the want of that early mental culture which is afforded in the higher seminaries of learning, scattered all over the land, and of which this is a bright example. While an education which is procured by self-exertion alone may be more appreciated than where the student is furnished with ample means, there is too much danger that it will be incomplete. He who educates himself is apt to be too impatient to enter upon the career which he

has marked out in the actual business of life, trusting to make up all deficiencies by industriously improving such leisure hours as may occur in after years. This may, no doubt, be done to a certain extent, but he who adopts this course, even with the most success, will often discover that he has committed an error. He constantly finds himself engaged in the embarrassing task of laying the foundation and rearing the superstructure at the same time. Undoubtedly, time is saved and thoroughness secured by accomplishing the first before attempting the second. In the midst of business responsibilities, often exacting, it requires much force of will and industrious energy to make up for such deficiencies; and in too many instances the task has been sooner or later abandoned. Still, much, certainly, may be accomplished in this direction by persevering and systematic effort, as is shown by the history of a large proportion of those who have attained eminence in professional and literary life, not only in this, but in other countries. Even in England, where the accident of birth is supposed to have a much more potent influence in determining the destinies of the man than in this country, many of the most eminent of her Lord Chancellors have risen from the humblest walks of life, where they spent their boyhood in laborious services, while their competitors for professional honors and the woolsack were trained in the halls of Oxford and of Cambridge. But they attained eminence, not because of early disadvantages, but in spite of them. Many who have made no mark in the world would have become eminent with a liberal education to build upon; while many others who have become eminent, but for the foundations laid in these seats of learning would have passed through life unnoticed. Let none be deceived by the exceptional fact that many have succeeded without a collegiate education, and conclude that early educational facilities are not advantageous.

Wealth is not necessary to secure an education in our institutions of learning. Those of narrow means may still

put it in the power of their sons to graduate, if these will but practice that economy and industry to which those who are determined to conquer success are ever ready to submit. How abundantly is this illustrated by reference to the alumni of this institution who have gone forth from her halls, with the wide world before them, depending only upon the lessons she has taught and their own high resolves.

If within half the period usually allotted to the life of man but few changes have taken place in the scenes around us, if the same inspirations are awakened by inhaling the atmosphere surrounding these halls of learning, marvelous have been the changes in other parts of our country, denoting the most rapid advancement of the arts and the sciences, of agriculture, manufactures, and commerce, of civilization and religion. Then the most rapid mode of travel, even through this State, was by the canal boat or the stage-coach; but few steamers were on the lower of the great lakes, and the surface of the waters beyond was seldom broken by larger vessels than the Indian canoe, or the bateau of the fur trader. The great plains beyond the lakes were the hunting grounds of the Pottawatomies, and the still greater country beyond the Mississippi was almost an unknown land, clear away to the Pacific coast. Thirty-five years ago a journey from here to Chicago occupied three weeks; now it is performed with ease and comfort in thirty hours. Then Chicago had not two hundred and fifty souls, now she numbers two hundred and fifty thousand. No street could then be traced, but her few inhabitants were sheltered in shanties and cabins scattered in apparent confusion over the low, wet prairie, and along the margin of the river. Now her stately palaces and magnificent halls stretch away for miles along her broad avenues. She appears as a city of the old world, transferred on Houssain's carpet to the new, only no broken columns, no crumbling walls, no mouldering arches, testify of departed greatness, but all is new and bright and strong; all is activity and

enterprise, an explanation of the past and a promise of the future. Here the force of freeborn enterprise has rivaled the results of imperial power, whether exerted by a Peter in building his palaces on the morasses of the frozen north, or a Constantine when he erected his new capital on the site of old Byzantium, along the banks of the Bosphorus and the shores of the Propontis. This wonderful advancement is not confined to Chicago alone. I might, with equal propriety, refer to many other great cities in that occidental land to illustrate its progress.

Thirty-five years ago, when I first wandered over them the great prairies were unbroken by cultivation. Rank grass and brilliant wild flowers covered their bosoms, and the silence of solitude reigned over all, sometimes oppressing the lonely traveler who pursued the winding trail through those great gardens of wild nature's culture. All is changed. Fences and fields are everywhere. Waving corn is now where the wild grass grew. Now the deer and the wolf are replaced by flocks and herds and the shepherd's dog. Instead of the Indian trail, railroads traverse every part of what was then called the West, and are already beyond the summit of the Rocky Mountains; they will soon span the continent, and unite us to that great land of wonders on the shores of the Pacific Ocean. In all this, those sent forth from here have done their full proportion. I have met them everywhere, in all professions and in every honorable calling, and, I am proud to say, I never saw one who did not reflect honor upon the place of his education.

It may be appropriate that especial reference be made to that science and profession which forms a distinct department of study in this institution, — the first and sure foundation for which was laid by the munificence of the lamented Maynard; and to promote which is, at least, one of the grand objects of this new structure, whose fair proportions present so gratifying a spectacle to all who have contrib-

uted to its erection, and who find their love for the institution warmed into new life by the contemplation of her increased usefulness in the future. Especially may I speak of that eminent and excellent man, whom I knew well, whose princely bequest has contributed so largely towards a great library for this department, and for which, in part at least, this new hall was raised. He was wedded to his profession, nor turned he aside to gather fruits or flowers in other fields, however inviting may have been their promise. He thoroughly studied and fully comprehended the philosophy of the law, and so was enabled to fathom its most hidden intricacies, and to make others understand and appreciate it as he perceived it himself. He did not depend only upon his own conceptions of what the law should be, but he explored with untiring industry all the sources of light, both ancient and modern, which could enlighten his understanding. He eschewed the arts and tricks to which only little minds resort to secure success, and only sought to triumph through truth and justice. His personal integrity inspired the confidence of all, and his merit was of that peculiar character which commanded the admiration, without exciting the envy, of those of his competitors who felt his admitted superiority. In a position of great public trust, to which he was called by his eminent fitness for the task, he did much to improve the laws of his own State; and the results of his efforts in that department are read and admired by jurists and legislators in other States and in other countries, and will be more and more appreciated as the wisdom of his labors is developed by time and experience. He was a bright ornament to his profession, and when he was called from his labors on earth to a higher and brighter sphere of existence, one of our great lights went out, but it has left a radiance behind which illuminates the way that leads to eminence, to usefulness, and to honor. His bequest to this institution gives you those treasures of legal learning which he had collected with great

judgment and at large expense, and which he carefully studied with so much profit to himself and to the community. When the student shall be engaged in the perusal of those works which were so much the study of that munificent testator, it may well quicken his zeal and ardor to remember that the same pages were read and deeply pondered by one who, as the architect of his own fortunes, achieved greatness by his own energies and merit, and whose memory will be revered while the science of law shall continue to be a distinct study. Whoever shall look for a model worthy of the closest imitation; whose precepts, acted out through a useful and laborious life, clearly indicate the road to sure success; whose career filled the measure of a most laudable ambition; who has left behind him an imperishable fame, I would point him to the life and the actions of the late WILLIAM CURTIS NOYES.

The Divine Creator has prescribed arbitrary laws for the control of inanimate matter. Upon the lower orders of creation He has impressed natural laws, which we call instinct, yet these are not absolute and irrefragable, as in the case of inanimate matter, for he has endowed the brute creation with a will by which they are enabled, to a certain extent at least, to control their own conduct. But man, the highest of his terrestrial creatures, He has not only endowed with a will, but with intelligence; and while He has written upon his heart and his conscience certain great general laws for his government, He has permitted him, and, indeed, imposed upon him the duty, to prescribe other laws, in harmony with these, for his own government, not only in his individual capacity, but in his aggregate relations. He has endowed man with power, when in his perversity he so wills, to violate those divine laws; hence arises the duty to prescribe human laws for the government of perverse men, and to provide immediate and palpable penalties for the violation of these laws. I will add further, that no man in his fallen state is so wise and so just as to super-

sede the necessity of human laws, even in his individual case; for so imperfect is human intelligence, so weak is the human judgment, that even the most enlightened and conscientious may differ as to what is right and just in particular cases. From this difference of perception as to the right, and more from the fact that not all men are disposed to do at all times what they know to be just and proper, also arises the necessity of prescribing rules for the government of the conduct of all men, and these rules we call laws.

No race of men has ever been found so rude as not to recognize some laws for the government of individuals, and to adopt some mode for their execution; and but few who have not provided some organized form of government. In many the individual has been left to vindicate his own rights, and to execute in his own case the violated law which all instinctively recognize as right and obligatory. Though the people be so low as not to know the name of law, still they recognize its existence and its force. In the earlier ages of the world, universally and necessarily, the laws were retained in the memories of individuals and preserved by the traditions and customs of the people; nor did this cease to be the case when the art of perpetuating ideas by symbolic representations, and even by written characters, had become, to a great degree, perfected and quite generally diffused among the more advanced nations. Indeed, written laws for the government of the conduct of men have existed only in comparatively modern times, and it is a curious, and even profitable, study to trace the history of written laws from the first, till they became general over the most civilized portions of the world.

As was most fitting, the first example we have of a code of written laws comes directly from the Divine Author of all good; disregarding, as we well may, the apocryphal claims of the far east, arrogantly styled the Celestial Empire, and the sacred books of Egypt, in the existence of which some have believed. When God stood on quaking Sinai, from

out the fiery cloud He declared his laws for the government of his peculiar people, and with his divine finger he registered these in visible characters on slabs of stone, and by the hand of his chosen instrument published them to all the tribes of Israel. Worthy indeed is it that the first of all the written codes to control the conduct of fallen man should come from that Divine Legislator who had already, and from the beginning, graven on all human hearts the fundamental principles of right and wrong. Till then, not only the descendants of Abraham, but also, as I have no doubt, the polished people of Egypt, as well as the peoples and tribes of Asia and of Europe, were governed by a few simple laws, told only from the mouth of man, which were often perverted and distorted by rulers to gratify their ambition, their avarice, or their pleasures.

Perhaps two hundred years later we have some account of a code of laws by the first Cretan king, named Minos, for the government of his people, where now the Moslem foot, in the face of a supine Christian world, ruthlessly stamps upon the necks of prostrate Christians. These laws, Minos claimed, were dictated by Jupiter, in order to insure their acceptance by a heathen people. We have no evidence that they were ever written, though for centuries the Cretans submitted to their sway, with what gradual changes we know not. Here, then, something more than three thousand years ago, we may persuade ourselves we find the first dawn of the study of the law with something of the system of a human science. Although the many fables told of Minos have induced some critics to doubt if such a man has ever lived, I am willing to believe in the existence of such an ancient legislator. Later still, by some five hundred years, we find the great Lycurgus preparing, as he too claimed, by the inspiration of the gods, a code of laws for the Lacedemonians, to which king, senate, and people bowed in submissive obedience. Lycurgus had in Crete studied the laws ascribed to Minos, and borrowed much

from that ancient code. But, adhering still to the custom of unwritten laws which had generally prevailed, he expressly provided in his code that it never should be written.

The next legislator who attracts our attention was Draco, who, nearly three hundred years after the time of Lycurgus, prepared a body of laws for the government of Athens. After the Mosaic laws, these are the first distinctly claimed to have been reduced to writing. They were noted for their sanguinary character, which was so marked that they were said to have been written in blood. The most trivial theft, alike with the most atrocious murder, was punished with death; and this leveling of crimes he justified by saying that the former deserved death, and for the latter he could find no greater punishment. More than two thousand years later we find, among our own ancestors in Christian England, this bloody feature of the Draconian code in full force. At least one hundred and sixty different offenses were punishable with death. Not only the life of the great criminal was forfeited to the broken law, but its offended majesty was not appeased till punishment had been meted out to his nearest kindred; while for the larceny of a fowl or a loaf of bread the forfeit of the offender's life was deemed sufficient, at most, if to this was added the dismemberment of the inanimate clay. If antiquity of precedent lends sanction to authority, we see that these modern legislators could repose upon a firm foundation; claiming, no doubt, that they had improved somewhat upon the wisdom of their predecessors. Happily, all this is changed. A more enlightened civilization has inspired a wiser and a more humane policy, which proportions punishment to the magnitude of crimes.

The laws of Draco survived but a few years, when Solon, whose name has become a familiar word, while that of Draco is seldom heard, was selected as the second, as he was the great, Athenian legislator. So far as the lights of history enable us to judge, he framed for the Athenians, as

Lycurgus had for Sparta, a code of laws well adapted to promote the rude and warlike polity of a Greek republic; but, in truth, we learn from either little of those great principles of jurisprudence which mark the progress of after times, and which adapt themselves to the advancement of human thought and enterprise. Solon repealed the laws of Draco, and testified his reprobation of the cruel features of his criminal code, for he allowed the penalty of death only for the two great crimes of murder and adultery.

During all the kingly period, and for nearly three hundred years after the foundation of the city, I am not satisfied that Rome was governed by any written laws, although critics may dispute about this question. The first authentic record we find of these is the Decemviral Laws of the Twelve Tables. It would be unsafe to say how far the chosen legislators who framed them borrowed from the experience of Greece and the wisdom of her legislators, though it has been claimed that these former lights were consulted in their preparation, and that the learned Ephesian, Hermodorus, sat in council with the ten. The concise Laws of the Twelve Tables sufficed to govern the republic for a time, but soon the mania for making laws seemed to seize the minds of men, till the original provisions were so loaded down and buried with new statutes that posterity might regret that the twelve tables had omitted the provision of Zaleucus, which he borrowed from Charondas, that he who proposed a new law should do so with a halter about his neck. I have sometimes thought that our own country might wisely borrow from the learned Locrian so sure a device to check hasty and inconsiderate legislation.

Under the Roman republic we first find the law established as an independent profession, and studied as a special science. There it first raised its distinct schools, and called its separate professors. It numbered in its ranks the most learned and distinguished of the Roman citizens, and of the Roman Senate; and with the advantages of the increase of

ideas, and the growth of the human intellect, with the examples of the ancients and the culture of the moderns, the two thousand years which have since intervened have scarcely produced any superior, especially in refined literature and sublime elocution, to those Roman senators and advocates, whose names are as familiar from one generation to another as household words. What an amazing growth, from low and illiterate barbarism to astonishing greatness, do we here find developed in a very few centuries under a republic; and in this, as in their aggressions, they literally trod in the footprints of the Grecian republics. It is hard to resist the temptation to pause for a single moment and observe how quickly this growth in greatness subsided after the fall of the republics, and never revived again, except in occasional, though brilliant, flashes. During all the despotism of the Cæsars, and especially during the dark or the Middle Ages, the culture of the human mind was not only neglected but actually held in derision by those who shaped the opinions of mankind. From that time, upon the organization of the modern nations, since man has been allowed again some voice in his own government, his progress onward has been greater, vastly greater, because much more diversified than in the glorious days of the ancients.

But all progress did not stop with the fall of the republic. Rome was still great, though fading, in the culture of the arts and in the exercise of arms; but, above all else, the science of jurisprudence still grew and flourished, and it took centuries of imperial rule to corrupt its votaries to the exercise of a venal trade instead of the practice of an elevating profession. Yes, under the empire the study and the culture of the law still advanced, even after all else seemed to retrograde.

The Roman law was still confused, no doubt, with a great multitude of conflicting statutes, and overloaded with commentaries written by Roman jurisconsults, although frequent attempts at codification had been made, for which we

may instance the Gregorian, the Hermogenian, and Theodosian codes, till the time when the twelfth of the eastern emperors ascended the throne, early in the sixth century. Justinian, himself a jurist, resolved upon a reformation of the law, which was manifestly so much needed. He appointed a commission of ten learned jurists, with Tribonian at its head, to revise and reduce to a system the statutes of the empire subsequent to the reign of Hadrian, as contained in the three codes just referred to, while all others seem to have been practically treated as obsolete or repealed. This Tribonian was a man not only profoundly learned in the jurisprudence of his country, but, like Bacon, to whom he has been compared, he was accomplished in the most refined literature of his age; he was deeply learned in the arts and sciences of his times, and was well versed in the various schools of philosophy which the learned of the ancients so much affected. Nor does the parallel between these two great men end here, for the reputations of both have descended to posterity with a venal blot upon them, which, I am very proud to say, has rarely stained the judicial ermine.

The result of the labors of these second decemvirs was the Justinian Code. He next appointed a larger commission, with the same learned jurist at its head, to whom was assigned the task of digesting the judicial decisions, the commentaries, and the text-books of the civilians, whose very bulk had become so burdensome. From their hands came the Pandects, which superseded the use of the books of which it was the digest. Still these presented no consistent and orderly system of laws for the government of the empire, but rather the germs and principles from which such a system could be prepared. The Institutes were still wanting to perfect the system of Roman laws. By order of the emperor, Tribonian, Theophilus, and Dorotheus prepared this great work, in which the principles of law, confusedly dispersed through the other two, were arranged and sys-

tematized in a scientific manner. The order adopted in this work has really served as a model in all times since. It treats first of persons, then of things, then of actions, and finally of wrongs, both public and private. By the imperial sanction these constituted the laws of the empire, and the Christian emperor did not hesitate to adopt the policy of the heathen legislators who had gone before him, and claim, as the sanction of his works, the inspiration of the Deity. Upon these have been reared that great legal structure which we call the civil law, now prevailing on the Continent of Europe; and to them also the common law of England, which has been generally adopted as the basis of our jurisprudence, is indebted for all of those great fundamental principles which should govern the actions of men in civilized society, and upon which the wisdom of great judges has reared so great and admirable a system. Still these ancient codes could furnish but the foundation stones for modern jurisprudence. The law is a great and growing science, which must enlarge and expand with the advancement of society; and herein is shown the admirable adaptability of the common law. Under it, legislative enactments do not attempt to provide for each of the varied and complex questions arising in the intercourse among men. The common law assumes, undoubtedly, that it has existing rules for the determination of every question that can arise; but practically we are constantly meeting with new questions, arising out of new facts or relations among men, springing from the advancing improvements and civilization of society; and these are usually presented first to the courts for adjudication, when it becomes their duty to devise new rules or laws for the control of these new questions or relations. We persuade ourselves that this is not making, but is interpreting, the laws; but so has the great body of the laws in all times and in all lands grown up, and so will it be in all time to come.

The progress of society, and with it, necessarily, the rules

by which society must be governed, has made such advances in modern times that the law has now become especially a great and a growing science. Indeed, so great is it that no single life is long enough to learn it all, and no human intellect would be capable of retaining it all. No student of the law need fear that the time will ever come when he will have no more to learn, or mourn that there are no more subjects for his conquest. His course may be onward and onward, and still will he ever see before him new fields to be explored and new thoughts to be gathered. He who would be an accomplished lawyer must not content himself with learning merely the municipal rules which govern the state. It is equally important that he learn how to apply those rules; and to do this he must have a knowledge of the subjects to which they are to be applied. These embrace all the arts, all the sciences, all the employments of men. While none may hope to become actually accomplished in all these, it is possible to obtain a general knowledge of those most frequently brought in question in courts of justice. Agriculture, architecture, engineering, the mechanical arts, physiology, commerce, and navigation, are constantly the subjects of controversy and the themes for discussion in the legal tribunals; and how can it be expected that one who has no knowledge of these subjects can enlighten courts and juries upon them, or even understand the evidence applicable to them. Fortunately the profession may be and is divided into classes, in which some are devoted to one branch and some to another. While the bar may thus divide its labors, it is not entirely so with the bench. He who would qualify himself for judicial usefulness, and would hope to secure judicial fame, must make himself learned in the various branches of the law, for he must sit in judgment upon all.

In every department and in every position in the legal profession, both on the bench and at the bar, the most exalted integrity is indispensable to success, nay, to a settled

government, and the very existence of society. Whatever may be lightly said of the arts and sharp practices of some lawyers, there is, and ever has been, at least in modern times, a firm reliance upon the fidelity of the bar, and an undoubted confidence in the integrity of the bench, to which they are well entitled. This is proved by the extreme rarity of the exceptions. Whenever an exception has been found, it has been lifted up in history as a beacon to posterity, and has become especially odious to all men, both good and bad. Exceptions have been found, it is true, and the two great men whose names have been mentioned are instances; Tribonian and Bacon, great as they were, still were believed not be incorruptible. The lustre of their greatness has been forever dimmed by suspicions of venality, which in almost any other official position would have made no lasting impression on the public mind; all would have been overlooked and forgotten almost as soon as proved.

There is something in the study of jurisprudence, and in the associations with the profession, that implants in the mind of the student, as almost his first lesson, unswerving fidelity to his client by the advocate, impartial and unbought justice by the courts. I am sorry to say that I have known in my time dishonest lawyers, quite regardless of the principles of morality and integrity in their general intercourse with their fellow-men, but I never knew but one whom I had reason to believe could be bribed to betray the interest of a client. If others would act badly to advance even an unjust cause, there was a deep-seated feeling within them that was shocked, that spontaneously revolted, at the remotest proposition to betray that cause. Every other sentiment of honor and integrity may seem to be blotted out, while this remains unfaded through life. No doubt it is the general appreciation of the absolute necessity of this measure of fidelity and integrity that tends, in a very large degree, to secure it. Destroy public confidence in the legal

profession, and the practice of the law must cease to be a lucrative and an honorable occupation. Let it generally be believed that justice can be bought, that the judgments of the courts can be controlled by political predilections, by favoritism to classes, or by friendship to or by the money of individuals, then he who has suffered wrong will seek to right himself, rather than resort to tribunals where the party of integrity is sure to be defeated by an unscrupulous opponent. Soon the very ligaments that bind society together would become loosened, and confusion and anarchy would usurp the place of peace and order. If governments may still live, and even prosper for a time, when other departments are suspected of corruption, it is not so with this. Happy will it be for our country if no circumstance, neither the mode of appointment, the system of education, the laxity of public morals, nor inordinate ambition, shall lower the high standard of judicial purity, or weaken the public confidence in the integrity of the legal profession.

I have thus indicated the first, the last, and the highest sentiment that should be inculcated by every institution of legal learning; which has received, and, I am sure, ever will, receive special attention here. Here shall be shed the true lights of the law, tempered with the highest precepts of morality, justice, moderation, and integrity. From these halls, and from such as these, must go forth those who must take an active and a prominent part in the government of the country, and especially those by whom the laws shall be administered; upon a pure and a holy administration of which the welfare of the nation, the lives, the reputations, and the fortunes of its citizens depend. Let all, both teachers and learners, appreciate the high responsibilities of their respective stations, and so bear themselves as to secure the substantial rewards of an appreciative public, the smiles of an approving conscience, and the favor of Almighty God.

To those who are the chosen representatives of this institution of learning I am especially commissioned to address

myself by such of her alumni as have selected the west for their homes, and have identified their fortunes with its destinies. They are scattered over the whole of that broad land. They are denizens of every city there. They cultivate the broad prairies and inhabit the secluded valleys. They adorn every profession and are engaged in every useful occupation. They sit upon the judicial bench and in the legislative halls of nearly every western State. They occupy chairs in universities, and mark out railroads across the plains and over the mountains. Indeed, wherever there is a field for talent, for learning, and for enterprise, they are found, full of life and energy, doing their share to promote the advancement of that portion of this great nation in its onward career. But, amid their cares and duties, with what fond remembrance do they recall their college days, when they formed those friendships and cemented those attachments which are so pleasing and so permanent; and how gladly do they rest from their labors and join this reunion around the maternal hearth-stone. If they gratefully remember the benefits here bestowed, so do they feel an honorable pride in the prosperity of the institution which bestowed them, and a pleasure in contributing, as they may, to her advancement and her usefulness. Nor is this feeling confined to her own proper offspring, but is felt in an equal degree by the children of her adoption.

This hall, erected exclusively with funds contributed by the western alumni, I am instructed to present to you in their name. It is an offering by them to their Alma Mater as an evidence of the reverence and affection they feel for the maternal institution which tenderly watched over them in their younger days, of the gratitude which animates them as they remember the benefits conferred in the lessons here taught, which have contributed so largely to whatever of success has attended them in their several walks of life. Pardon me for referring to one of their number whose memory they wish should be perpetuated in the name of this

structure. After he had received the lessons and the honors of this institution he studied the profession of the law, in which he gave bright promise of success when he joined the teeming throng whose face was turned towards the west, and settled in the wilderness of Wisconsin. Its shades could not hide his great executive talent, and the first railroad that pointed towards his new home claimed him for its own. For twelve years he has been one of the great railroad spirits of the west; and with the aid of other great minds, in unison with his own, he has raised his company to the exalted position of owning more miles of road than any other company in the United States. In the midst of his toils and his triumphs he has not forgotten where the foundation was laid, but he has, with a noble generosity, contributed one half the cost of this building. Fitting then is it, we think, above all things, that our offering should be named "PERRY H. SMITH LIBRARY HALL."

Within these walls are to be gathered those treasures of learning in which shall be garnered the thoughts, the actions, and the discoveries of the past, the present, and the future. Here, as to the Mecca of its hopes, will the thoughtful mind, panting for knowledge, bend its way, and in these silent alcoves feast upon the lore here treasured. Those who love their Alma Mater will look upon her lamp of learning as newly trimmed, shedding a broader and a brighter light along the way to knowledge. May the smiles of an approving Providence beam upon us with his divine blessing, which alone can consecrate our works to the advancement of his glory and the elevation of his creatures.

VII.

AN AMERICAN STATE AND ITS ARCHITECTURE.

ADDRESS ON LAYING THE CORNER STONE OF THE NEW STATE-HOUSE AT SPRINGFIELD, ILLINOIS, OCTOBER 5, 1868.

THESE scenes and ceremonies are suggestive of the past, the present, and the future. Within less than fifty years, which marks the period of our state existence, this is the fourth time a corner-stone has been laid of a structure for the convenience of the people's representatives when assembled to pass laws for the good of all, and for the accommodation of the courts when called upon to administer the laws impartially to all, and also for the preservation of the archives of the State where future generations may observe the acts and doings of its early founders, and trace its progressive steps from its feeble beginning in 1818, till it shall have attained its full and matured greatness in the time to come. Many are still living, nay, there are many who hear me now, in whose memories are recorded the history of the past, who are still permitted to behold the present, and who may well hope to see years of the future. Most of her growth to her present greatness has been developed during the thirty-five years of my residence here. What, however, may be termed the romance of her history had nearly passed away when I came; but not all. If her legislature was accommodated in an edifice erected for the purpose, a large proportion of the courts in the country were necessarily held in log school-houses, or the bar-rooms of country taverns, from fifty to a hundred miles apart. The great intervening

prairies were traversed from point to point by judges and lawyers on horseback. Many still live to sigh for those joyous times, when going the rounds of the circuit seemed like a holiday festival; when fraternal concord and cordial good will were more cultivated and better illustrated than now, when a more artificial state of society prevails, under the influence of modern improvements, which seem necessarily to exclude such intimate companionship. There were great men then, who have left a deep impress upon our State, most of whom are gone; among them I may mention Kane, Cook, Mills, Hall, McLean, Starr, Blackwell, Ford, Williams, and I may add Lincoln, though most of these had passed away before he joined the ranks of those who went the circuit rounds and gladdened the joyous cavalcade with his genial presence. May we not hope that some competent pen will yet record the romantic history of those times, now preserved only in the memories of their living contemporaries. They who were the companions of these men when living, who knew their real worth and learning, and who could really appreciate their great talents, will cherish their memories with more fondness than is possible to another generation, who can only know them through a remoter medium.

As these men traversed the great prairies on horseback, going the circuit rounds, probably not one of them foresaw how soon railroads would change the mode of travel, and that soon their successors would accomplish in an hour the distance which occupied them a day. Could they have anticipated all that has come to pass, we may well doubt whether they would willingly have changed the close companionship, the genial feeling, and I may add the jolly times which they enjoyed, for the colder atmosphere and more selfish habits which seem to have grown up under the influence of modern improvements. Who now seeks to pay another's bill, or offers his friend a passage ticket? If the promotion of human happiness be the greatest attainable

good, and worthy of our most anxious care, we may pause a moment in our admiration of the great things lately done among us. Who shall say that there is more genuine happiness, more cordial good feeling, more brotherly love, now than then? But if the sigh of regret is forced from us, that many bright and pleasant scenes of the past can never be repeated, we may not disparage that which has added so much to the greatness and the wealth of the present of our State and nation, and promises so much more for the future. We who have witnessed all can hardly appreciate the wonderful facts. If it seems extravagant to assert it, a moment's reflection will convince us that the world has made more actual progress within the last fifty years, during our existence as a State, yes, I will say, within the last thirty-five years, since first I became one of her citizens, than in all previous time since Adam was driven from the garden of Eden.

First I will refer to the means of locomotion and transportation. Until the introduction of railroads, what improvement had been made in these since the earliest dawn of civilization — at least since the horse was domesticated and the wheel had been invented. The Queen of Sheba could visit Solomon in as great state, and with as much ease, comfort, and expedition, as Elizabeth could visit Kenilworth, or even Victoria could visit Balmoral; Jackson had no better means for going from the Hermitage to the capital than had Cæsar for visiting the provinces; Napoleon transported his great armies in the same way that Alexander moved his into Asia. Only in our day has it become possible, as has been often demonstrated, to move a great army, with all its *impedimenta*, a thousand miles in two days, which would have required, only the preceding generation, as it would three thousand years ago, many months to accomplish, at a great expense of treasure and human life. Thirty years ago the same means were used to cross the ocean which Columbus used to reach America; then, our national representative went to St. James by the same agency which Paul

used to reach Ephesus and Athens; now, every sea and ocean is traversed by steamers which court the contrary winds, and lay their course from continent to continent with scarcely the variation of a single point.

Within the same period gas has been adopted for the production of artificial light. Since the time when lamps were first lighted, till the time when I sat upon the bench in yonder State House, by the dim glimmer of a few tapers, only the least imaginable improvement had been made in artificial illumination. How great the contrast since the introduction of gas, one burner of which gives twenty times the light of our best candles, and if a brighter, a more conquering light, is still desired, we have but to apply to Drummond, when the darkness is dispelled almost as by a midday sun.

I might allude to many other great inventions and discoveries of the present age for the advancement of human thought and enterprise, but time permits a reference to but one, the most wonderful and mysterious of all. The magnetic telegraph presents the means of transmitting information at great distances with a celerity which, before our day, was only practicable within the compass of the human voice. Till within the last twenty years we were provided with no more speedy means to send information to a distance of one mile or of a thousand miles, than were the Pharaohs or the kings of Israel, the Incas of Peru or the Montezumas of Mexico. Now the time is quite inappreciable which is required to send information the greatest distances, and even beyond the broad Atlantic. Had it been proposed to Jackson to send a message from the Hermitage to the capital with the speed of the wind, he would have listened to it with incredulity; then what would he have said to the proposition of Morse, to outstrip the velocity of the meteor with his message to Washington.

I cannot resist the temptation barely to mention one other great invention, which, if of less value as a mere matter of

business, is scarcely less wonderful, and surely gives as much joy to the human heart; I allude to the sunlight pictures, which now fill every palace and every cabin with the faithful portrait of loved ones absent and present, who may thus be handed down from generation to generation. I am sure I do not stand here alone to regret that this sublime art was not invented in time to perpetuate the lineaments of faces much loved, but gone, alas! too soon.

Am I not right, then, in saying that the world has made more progress in the last thirty-five years than in all the ages that have gone before? Surely we are now in the La Chine Rapids of time, which hurry us along with a giddy velocity, amid scenes so changing that we can only glance at their most prominent features. Is it folly to say that we should have a care lest we strike some hidden rocks by which the channel may be beset, lying not far beneath the surging surface.

I find I have taken a wider range in considering the past and the present than I had designed. Let us return to our own State, which should more immediately concern us. Nature has decreed that our great interest should be agricultural, and it is most natural that our attention should be first arrested by those great agriculturists who, thirty years ago, had already rendered our State famous; among them I may mention the names of Strawn, Funk, Brown, and Morrison. Their corn fields covered whole prairies, stretching away further than a human eye could reach, and their countless herds rivaled those of the mountain Kirghis and Khans of the great nomadic tribes which roam the vast steppes of Northern Asia. These men were great originals, possessed of great natural talents and equal energy; they conceived and developed plans, corresponding in magnitude to the great country in whose wild luxuriance they found themselves; accomplishing results rarely equaled, and amassing wealth never before known in so short a time, in purely agricultural pursuits. Such were the men who laid

the foundation of Illinois's agriculture; these men were of the past, though some of them still live and constitute a part of the present. If we now see greater fields and herds in the hands of the Sullivants and Alexanders, these men will gladly admit that they have imitated while they have enlarged upon the works of their predecessors. If the architecture of those times was rude, it was convenient, and the hospitality of those men was as free as the air they breathed. They enjoyed all their wealth in the large and commodious double log-house, in which they despised the tinsel glitter of later times. Their ambition of display was in fields and flocks and herds.

For many interesting events of former times, more especially germane to the present occasion, I am indebted to the present learned Chief Justice of our State, whose whole life, from boyhood, has been spent here. In no other way can I so well tell of the past as to use his own words. In answer to my inquiries Chief Justice Breese says: —

"I came to the State the very month it was admitted into the Union, — December, 1818, — and though writing from recollection only, having no recourse to memoranda which I have at home, I think what I write may be relied on. This State, as all know, was a part of the Northwestern Territory, and was claimed by the State of Virginia to be included within the limits of the charter granted by James I. To this claim was superadded the conquest of a portion of it — Kaskaskia and Vincennes — by the arms of Virginia, led on by General George Rogers Clarke, and its incorporation into the State, by forming it into a county, called the 'County of Illinois.'

"In September, 1780, the Congress of the Confederation recommended to the several States in the Union, having claims to waste and unappropriated lands in the western country, to make a liberal cession of a portion of their respective claims for the common benefit of the Union. With the generosity and nobleness of spirit which has ever char-

acterized our sister, she ceded to the United States, in 1784, all her western lands included within the royal patent, reserving only a small tract on the north bank of the Ohio, and now in the State of Indiana, to be allotted to the officers and soldiers of Clarke's regiment who marched with him when the British forts at Kaskaskia and Vincennes were recovered; and another tract between the Scioto and Little Miami, in Ohio, to make up the deficiencies to the officers and soldiers on Continental establishment.

"For the government of this large and widely spread Territory, Congress passed the ordinance of July 13, 1787, and General Arthur St. Clair, a distinguished officer of the Revolution, was appointed governor over it. The seat of government was at Chillicothe, on the Scioto. This official established the counties of Randolph and St. Clair, which for many years were the only counties in this part of the Territory. Delegates to the legislature from these counties met those from other parts of the Territory in council at Chillicothe.

"On the 30th of April, 1802, an act of Congress was passed, enabling certain portions of this Territory therein defined to form a constitution of state government. The State of Ohio was the result, and she was admitted into the Union, February 19, 1803. The residue of the Territory was organized as Indiana Territory, and William Henry Harrison appointed governor, and this ordinance extended over it. Delegates from this part of the Territory met their associates in the legislature in Vincennes, Indiana, which was then the seat of government, and so continued up to February 3, 1809, at which time the Territory was divided by an act of Congress of that date. Jesse B. Thomas was then the delegate in Congress from Indiana Territory, elected, as the ordinance required, by joint ballot of the House and Council, of the former of which he was a member. The assembly had been closely divided on the question of a division of the Territory. Mr. Thomas had pledged

himself to the members from the western part of the Territory to do all he could in Congress to effect a division, and with their votes and his own he was elected by a majority of one! Mr. Jefferson, then President of the United States, was known to be hostile to a division; but such was the persuasive power of the new member, and such his persistence, that he accomplished the object, and returned to Illinois with the commission of Judge of the United States Court in the Territory. His associates on the bench were William Spriggs, a very good lawyer, from Maryland, and Alexander Stuart, of Virginia, a man of fine education and polished manners, and withal a good liver, of whom it is said, he esteemed the turkey 'the most inconvenient of the poultry tribe, as it was too large for one, and not large enough for two.'

"The act of Congress of February, 1809, dividing Indiana Territory, provided that the seat of government of Illinois Territory should remain at Kaskaskia, on the Mississippi River, until the legislature of the Territory should otherwise direct. The territorial government was at once organized by the appointment of Ninian Edwards, then not more than thirty years of age, and who had been previously Chief Justice of the Supreme Court of the State of Kentucky, the governor of the Territory. He was accompanied by his relative, Nathaniel Pope, who was appointed secretary, and by John J. Crittenden, appointed United States District Attorney. These gentlemen made their headquarters at Kaskaskia.

"The legislature of the Territory was composed of a council of five members appointed by Congress, on the nomination of the members of the House; and the members of the House were elected, twenty-five in number, by the free white male inhabitants in the counties and townships — the former holding their offices five years, and the latter two years. For both, a freehold qualification was requisite. The Governor, Legislative Council, and House of Representatives had authority to make laws in all cases for the good

government of the district, on the passage of which the governor had an unqualified veto.

"The sessions of this august body were held in a large, rough building in the centre of a square, in the village of Kaskaskia, the body of it being of uncut limestone, the gables and roof, which was of the gambrel style, of unpainted boards and shingles, with dormer windows. The lower floor, a large and cheerless room, was fitted up for the House, whilst the council sat in a small Chamber above, around a circular table; and, it is said, when the labors of the day were over, the interesting game of 'Loo' at once succeeded. This venerable building was, during the time of the French occupancy of the country, prior to 1763, the headquarters of the military commandant, and, doubtless, within its walls many an arbitrary edict was framed, to be executed, with all the severity attendant upon the administration of military law, by a military man. The laws passed by the territorial legislature were, for the most part, adopted from the codes of neighboring States, Kentucky principally. They were revised by Mr. Pope, and published in two volumes, and known as 'Pope's Revision.'

"During our territorial life, we had three different delegates to Congress. The first was Shadrack Bond, an intelligent farmer of Monroe County. He returned with the commission of Receiver of Public Moneys for the Kaskaskia Land District. The next was Benjamin Stephenson, the father of the gallant James W. Stephenson, of Galena, whom you well know. The last delegate was Nathaniel Pope, late Judge of the District Court of the United States for the District of Illinois. He achieved much for our State during his short term of service. He was elected to procure the passage of an enabling act of Congress preparatory to admission into the Union as a State. He took his seat in Congress in December, 1817, and on the 18th of April following the enabling act was passed. You will observe a striking departure from the Ordinance of 1787 in that act.

By the fifth article of the ordinance, it was provided that there should be formed in the Northwestern Territory not less than three, nor more than five states, the boundaries being as follows: The western State in the said Territory to be bounded by the Mississippi, the Ohio, and the Wabash rivers; a direct line drawn from the Wabash and Port Vincents (Vincennes) due north to the territorial line between the United States and Canada, and by this territorial line to the Lake of the Woods and Mississippi. The boundaries of the middle State (Indiana) were then defined, and also those of the eastern State (Ohio), and then follows this provision: 'And it is further understood and declared, that the boundaries of these three States shall be subject so far to be altered that if Congress shall hereafter find it expedient, they shall have authority to form one or two States in that part of said Territory which lies north of an east and west line drawn through the southerly bend or extreme of Lake Michigan.'

"The idea was natural that one of these States should be south of this east and west line, and bounded by it on the north; but Mr. Pope, by his persuasive arguments and persistence, gained the consent of Congress, in the enabling act, to carry our northern line to a point in the middle of that lake, in the latitude of forty-two degrees and thirty minutes, and thence west to the middle of the Mississippi River; thus securing to us a long line of coast on that inland sea on whose bosom our products are borne to the markets of the world, and on its beautiful shore there is now a mart of commerce unsurpassed in the extent of its traffic in lumber, provisions, and grain.

"Soon after the passage of this enabling act, an election for delegates to a convention was ordered. There were then but fifteen counties in the Territory, the most populous of which were St. Clair, Madison, and Gallatin, each of them having three delegates; Jesse B. Thomas was a delegate chosen by the people of St. Clair, and was elected president of the convention. The other counties had each two mem-

bers, all of whom signed the Constitution except one delegate from Washington, who died whilst the convention was in session. This body of assembled wisdom, for it was so, convened in the same 'Old Stone House,' in the large room on the ground floor, and was presided over with great ability and dignity by Judge Thomas, who possessed as much of the *suaviter in modo* as any man I have ever known. The deliberations of this body closed on the 26th of August, 1818. The original draft of the Constitution was engrossed by Col. Henry S. Dodge, the father of Mrs. Benjamin S. Edwards, signed by the members of the convention, and deposited in the office of the secretary of state, where it now reposes. It is a noble specimen of penmanship, and he was a noble specimen of humanity.

"The Constitution was not submitted to the people for approval, that not being the fashion of the day. The doctrine then was, as the people had elected representatives of their opinions to frame a Constitution, their acts were binding on them. The territorial officers gave up their seals of office so soon as their places were supplied by elections provided by the Constitution. It was provided by this instrument that the seat of government should remain at Kaskaskia until the General Assembly should otherwise direct; and that body was required, at their first session, to petition Congress to grant to the State a quantity of land of not more than four and not less than one section, or to give to the State the right of preëmption in the purchase of that quantity, the land to be situated on the Kaskaskia River, and as near as might be, east of the third principal meridian on that river. Should the petition be granted, the General Assembly, at their next session thereafter, were required to appoint five commissioners to make the selection of the land granted, and to provide for laying out a town upon it; which town, it was declared, should be the seat of government of the State for the term of twenty years. The president of the convention was required by the Constitution to

issue writs of election for governor, lieutenant-governor, sheriffs, and coroners, and for members of the General Assembly, as apportioned by the Constitution. This was done and the election held, at which Shadrack Bond, who had been the first territorial delegate, was elected governor, and Pierre Menard, a Canadian gentleman of great wealth, extensively engaged in the fur trade, and one of the best men I ever knew, was elected lieutenant-governor. Members of the General Assembly were elected from the several counties, and they convened in October, 1818, in the 'Old Stone House,' and thus was the new government put in motion. At the session held in this month, which continued but a few days, nothing important was done, save and except the election of Ninian Edwards and Jesse B. Thomas to the United States Senate, and the election of four judges of the Supreme Court. The memorial to Congress for the grant of land for the seat of government was also adopted, the prayer of which was favorably answered, but not until the second session of the General Assembly, which was in the month of January, 1819. The news of this action of Congress was received with intensest joy by the majority of the legislature, many of whom had been members of the committee.

"There is a little history about this seat of government movement. When the question was before the convention, two points were in contemplation by members and outsiders; one was Carlyle, just then located on the Kaskaskia River by two Virginia gentlemen, and an elevated site higher up that river, known as Pope's Bluff, and the property of Nathanael Pope. He and his friends were, of course, very desirous that the seat of government should be located there, while the proprietors of Carlyle had no less desire that the latter place should be the favored spot. While the subject was under discussion in-doors and out, there came to look in upon that body a noted hunter and trapper, one Reavs by name, who had his cabin still higher up the river, and near where the third principal meridian crossed the stream.

He spoke in glowing terms of the beauties of 'Reavs's Bluff'; that 'Pope's Bluff' nor Carlyle, was n't a 'primin'' to his bluff. To defeat the friends of Pope's Bluff, as well as Carlyle, it was agreed that land on the river, as near as might be, east of the third principal meridian, should be the chosen spot. At the session of 1819 five commissioners were appointed to select the land granted by Congress, and they selected the old hunter's home, 'Reavs's Bluff.' It proved to be a most beautiful spot, a heavily wooded tract, covered by gigantic trees, under whose shades the former lords of the soil might have held grave council. A town was laid out with a handsome public square and broad streets, and christened 'Vandalia;' but these vandals did not suffer one of those forest kings to remain on the square, but cut them down to the ground, leaving not one to sigh in the summer wind or bend to the blast.

"Lots were sold at public auction, on credit, at fabulous prices, few of which were paid for in full. The enterprising and scheming, some from the Old World, came to it, and soon the nucleus of a town was formed. Measures were inaugurated for the erection of a State House, which culminated in a plain two-story frame building, of rude architecture, set upon a rough stone foundation, and placed in the centre of the square, the lower floor of which was devoted to a passage and stairway to the upper story, and a large plain room devoid of ornament; the upper floor was divided into two rooms, the largest for the accommodation of the Senate, and a smaller one for the office of the secretary of state, the auditor and treasurer occupying detached buildings, hired for that purpose. No ceremonies were observed in laying the corner-stone of this unsightly structure; no music disturbed the solitude of the forest, then in its primeval beauty; no crowd in pride of pageantry lent excitement to the scene; no sound was heard save the rap of the mason's hammer and the sharp click of his trowel.

"These preparations being made, the archives of the

State were removed from Kaskaskia to Vandalia, and it was my fortune, being the clerk of the then secretary of state, Mr. Kane, to remove his office, which I did in a small road-wagon, early in the month of December, 1820, encountering in my route great difficulties, and, as there was no wagon road, the driver and myself had to cut a way through the woods at several points; I opened the office in this little room in the second story of the State House, the whole of the rest of the building being then occupied by the family of the auditor, with whom I was a boarder. During the entire session of the legislature, which commenced the first Monday of the following November, I kept the office in this room, the auditor removing his family to a small cabin on the outskirts of the town.

"In this humble building Jesse B. Thomas was reëlected to the Senate of the United States, John McLean to serve out the term for which Governor Edwards had been elected, he having resigned on being appointed Minister to Mexico, and Elias Kent Kane received his first nomination and election to that distinguished body, and in it Governor Coles, successor of Governor Bond, delivered his inaugural address.

"The tenure of office of the judges elected by the General Assembly at their session in October, 1818, was fixed by the Constitution, 'until the end of the first session of the General Assembly, which should be begun and held after the first day of January, 1824.' That session was held in this building, when William Wilson, of White County, was elected chief justice; Thomas C. Browne, of Gallatin, re-elected; Samuel Drake Lockwood, of Madison County, and Theophilis W. Smith, also of Madison County, were elected associate justices, to hold office during good behavior. But one of them survives; he is in active life, and one of the trustees of the Illinois Central Railroad, appointed by the State. May he long live to witness the further developments of this magnificent State, whose advent to it was on the same day as my own. I shall never forget the day on

which the session of 1820 commenced. It was most beautiful. The sun shone in cloudless splendor, and the temperature of the air was autumnal. It being the first meeting at a new place, all was excitement, and all seemed pleased.

"This edifice was destroyed by fire, in what year I do not now recollect. It was succeeded by a commodious brick building, of sufficient dimensions, built, in part, at the expense of the citizens of Vandalia. The corner-stone was laid, as I remember, without any display; the building still stands, renovated and embellished by the people of Fayette County, and is now devoted to the administration of justice and to the various public offices of the county. In this building Kane and McLean were reëlected to the Senate, the latter dying in office; the vacancy was filled by the election of William L. D. Ewing. For the long term, General Robinson, of White County, was elected; and in 1837 Richard M. Young was elected for the term of six years. This was the last election of senators held in that building. As the twenty years, during which the seat of government was to remain on the land granted by Congress, was about to expire, measures were set on foot to change the location, — 'to put the State House on wheels,' — as it was termed, and such influences were brought to bear as to determine the legislature in favor of Springfield. A large appropriation of money was made by the State, and funds contributed liberally by the inhabitants of Springfield, for the purpose of erecting a substantial State House: one that should be an honor to the State, and its pride. The result is seen in that huge, unshapely pile, for the site of which a hole was dug in low ground. When reared, it was the wonder of the country round, — nothing so grand or magnificent was to be found, devoted to the purposes of legislation, in Europe or America. This was eight-and-twenty years ago. All men of taste and judgment have long regarded it as unworthy a great State, whose march to wealth and political power is unparalleled in any annals.

"At the first session held in this edifice, Samuel McRoberts, of Vermillion County, who had for many years been a prominent politician, was elected senator in Congress for six years; and at the same session the following named persons were elected judges of the Supreme Court, in addition to the four then on the bench: Samuel H. Treat, now U. S. District Judge of the southern district of this State; Thomas Ford, Walter B. Scates, Stephen A. Douglas, and myself. This action of the legislature originated, it is understood, in the hostility of the then dominant party to a decision made by two of the judges denying the power of the governor to appoint his secretary of state, making a vacancy for that purpose by removal of the incumbent whom he found in office when he was inaugurated. The case was tried before me, then circuit judge, on a *quo warranto*, and I decided, after full argument, that the governor had the power; an appeal was taken to the Supreme Court, and the judgment reversed by Wilson, chief justice, Lockwood, justice, concurring. Brown, justice, took no part in the cause, being a relative of the relator, and Smith, justice, dissented. The decision caused great excitement and resulted in the addition of five members to the bench.

"Twenty-eight years have made most wonderful changes in our noble State. When Thomas Ford laid down his judgeship in November, 1842, to assume the reins of government, the State had not credit or money with which to purchase a pound of candles, as he stated in a communication to the legislature. Notwithstanding the depressed condition of our finances during the whole of Governor Ford's administration, and perhaps influenced by that fact, the General Assembly, at the close of it, submitted to the people the question of a revision and amendment of the Constitution, which was affirmatively decided, and a convention was called in the summer of 1847.

"That body, though financial distress prevailed throughout our land, and every department of business was lan-

guishing, incorporated into the Constitution this clause: 'There shall be annually assessed and collected, in the same manner as other state revenues may be assessed and collected, a tax of two mills upon each dollar's worth of taxable property, in addition to all other taxes, to be applied as follows, to wit: The fund so collected shall be kept separate, and shall annually, on the first day of January, be apportioned and paid over, *pro rata*, upon all such state indebtedness, other than the canal and school indebtedness, as may, for that purpose, be presented by the holders of the same, to be entered as credits upon, and to the intent of the extinguishment of the principal of said indebtedness.'

"This clause the people sanctioned by their votes accepting the Constitution, and at once the credit of our State was redeemed. It was a sublime sight to see the people voluntarily taxing themselves, and thus devoting a portion of their labor, or its avails, to the payment of their honest debts. As the Supreme Court of this State said, in the case of *The People* v. *The Auditor*, 30 Ill. 439, in speaking of this: Never, perhaps, in the history of any State, has a grander spectacle been presented than in the action of our people, when in the darkest period of our infant history, public and private embarrassment being almost universal, in their voluntary uprising to subject themselves to a heavy tax and shackle themselves for an indefinite period. The result is seen in the almost entire obliteration of our onerous state debt, and in the quickened march of our people to wealth and independence. Our State is now an empire, owing an insignificant public debt, and with a credit in the money markets of the world unsurpassed. When I came to the State in 1818 we had not forty thousand people; we now count our millions, and shall soon lead the van in the mighty sisterhood of States."

In this interesting sketch of former times, we may specially note a regular and ascending gradation in the architecture and magnitude of the several state structures which have

been erected for the public service, and it is interesting to observe how exactly they have kept pace with the growth of our State in wealth and population; and who shall say how long it will be before this one, whose corner-stone has just been laid with such imposing ceremonies, whose enlarged dimensions promise accommodations so complete, whose architectural designs inspire so much of our admiration, may not be deemed insufficient to represent the wealth, the greatness, and the dignity of Illinois?

Public structures have undoubtedly, in all countries and in all times, among the civilized and even semi-civilized nations, been considered as representatives of the greatness and dignity of the rulers or the peoples by whom they were built. Until quite modern times, with rare exceptions, the great object of the architectural designs of these structures has been to secure great durability and an imposing display, rather than practical utility. So far as we now have lights to judge from, the great temple of Belus at Babylon, while among the greatest ever reared by man, and no doubt deemed by those who reared it indestructible, was not designed for the convenience of the worshipers, but to honor their heathen gods by great magnificence and vast expenditures. Those hanging gardens which Nebuchadnezzar constructed in honor of his coming bride had not the least idea of utility connected with them; all was intended for display; they were fields of made earth, sustained by immense arches, over a natural soil more fertile than any other ever found on the surface of this globe, if we except our own American bottom lands.

The architecture of Egypt, as displayed in the erection of her vast tombs, her temples, and her pyramids, have display for their principal idea. While such incredible sums were squandered for display alone, we are told by all historians, from Herodotus down, that the whole people, both in city and country, lived in filthy hovels; and even royalty itself, although it builded stately palaces, sought only for display.

Could we see the chambers in which Cleopatra entertained Antony, we should be struck by their gloomy and forbidding aspect, which could not be relieved by their glittering extravagance.

The same is true of the architecture of China, as displayed in her great temples of Tings, Taas, and Micosi, as well as in their palaces and hovels for the homes of the people. So too of the monuments of ancient Ireland, of whose origin, neither tradition nor fable have transmitted to the descendants of Milesius the least account, else it would have been preserved to posterity, for there letters and the arts were first cultivated among the northern nations; they had written histories and high civilization long before Cæsar conquered Gaul, or their barbarous neighbors of Britain had submitted to the Roman arms. And so we may travel over the world, and glean from every source ideas of the architecture of its crumbling and prostrate ruins, and we are everywhere impressed with the same idea; harmony, beauty, grandeur, and stability, but rarely comfort and convenience, were elements in their architectural designs. In their military architecture utility necessarily found a place, but there was nothing for comfort. In their places of amusement alone do we find human comfort, or even convenience, consulted.

Even in Greece, which has ever been celebrated, if not as the birth-place, at least as the nursery, of architecture, the very thought of human comfort was lost in the same idea of display, which was carried to such great and varied perfection in the stately Doric, the beautiful Ionic, and the grand Corinthian, which formed their distinguishing characteristics. The most celebrated exemplification of Grecian architecture is found in the Parthenon at Athens, although everything ancient in that classic land tells us of it, and excites our admiration always, and sometimes our regret. In Rome, too, in the most ancient as well as in the architecture of later times, the same desire to please the taste, attract the

admiration, and command the wonder of mankind, was the supreme idea. In her Pantheon, erected nearly two thousand years ago, to the worship of heathen gods, and which was just twelve hundred and sixty years ago consecrated to the service of the Saviour of mankind, no provision is found for the real convenience of the heathen or the Christian worshiper. Of all the monuments of ancient Rome, this alone is left presenting to posterity its original appearance. Its portico, supported by forty-eight Corinthian granite columns, has been declared by architectural critics to be the most faultless and sublime in its appearance of anything recorded in ancient, or to be met with in modern, times. But it needs not the critical eye to discern its beauty and its sublimity; the dullest observer is struck with admiration at beholding its matchless symmetry and harmonious proportions.

> "Simple, erect, severe, austere, sublime!
> Shrine of all saints, and temple of all gods
> From Jove to Jesus, — spared and blessed of time!"

And yet with all this perfection of architectural design there is the same prevailing idea manifest. The architect exhausted all his powers for display and stability. When we pass from temples to amphitheatres; when we go from the Pantheon to the Coliseum, the most stupendous of all the ruins of ancient Rome, we see convenience consulted as well as harmony. The seats were so arranged that every one of the eighty-seven thousand spectators could see the slaughter of the five thousand wild beasts that fell in its arena at its dedication; and later, they could behold the Christian martyrs who were there compelled to combat the most ferocious beasts from the wilds of Africa for the amusement of the giddy populace of heathen Rome. But this vast multitude was only protected from the sun and the storms of Rome by canvas or silken awnings. Probably no one at that time dreamed of the possibility of springing a roof through which air and light might be admitted at will over

the great area of nearly six acres, upon massive outer walls rising to the height of one hundred and fifty-seven feet. I will venture the assertion that many an architect might be found in our day who would proudly undertake the task.

The Old World is full of ancient ruins of private palaces and castles, of which enough is left to tell us of their architectural designs and domestic plans. Here, too, stability and show are still the ruling thought, together with the provisions for military defense. Although designed for that purpose also, the convenience of a residence and the comfort of a household seem never to have been studied. As we wander through the ruins of Hadrian's villa, or the uncovered walls of the palace of the Cæsars, or the halls and passages of the baths of Titus, we are struck with the idea of how comfortless, dark, gloomy, and forbidding must have been those vast halls and chambers, when the gay, the fashionable, and the dissolute of Rome assembled there in wild revelry. These halls were without ventilation, and artificial light was almost as much needed in the day-time as in the night. Best of all, we may see the homes of the ancients in the exhumed ruins of Pompeii, where nearly all but the wood-work still stands as it was on the day when it was covered by the ashes of Vesuvius, and is now, after the lapse of eighteen centuries, exposed to our inspection, — the wine jars still standing in their places in the cellars of Diomede, the bread still in the oven, though overdone, the frescoes upon the walls as brilliant as when first the artist's work was executed, and the mosaic floors still preserved. As we pass through these houses of the dead we can see their inner domestic life, and the same thought is forced upon us, that they had no idea of what we call domestic comforts. The sleeping-room assigned to the apothecary's daughter, because the best, is but a dark and gloomy cell; and the place for the bed is a stone shelf, or rather abutment, two feet wide and three feet high, with an inclined elevation at one end, as for the pillow. Such seems to have been the

provision for the comfort of that third of human life assigned to sleep, even among the most luxurious, when Pompeii shone with its most dazzling brightness; and we have no reason to believe that the buried city was exceptional in this regard. The same features seem to have been universal among all nations whose records tell us of domestic life; and if time permitted me to follow the subject down through the sixteen succeeding centuries, we should find still but little improvement in the plans for human residences.

Passing from the Old World to the New, we are struck with the magnitude and the stability of the structures, the ruins of which are so profusely scattered over the plains of Yucatan, the highlands of Chili and Peru, and the mountains and the valleys of Mexico, extending, as we have learned within a few weeks, far up the Colorado. The architecture of these great buildings was rude indeed, showing but little of the harmony, the beauty, the sublimity, or even stability of the ancient orders. Still they are covered all over with rude efforts of ornamentation, and from the very durability and mass of their material many of them still stand in tolerable preservation, to excite the admiration of the beholder at the patient perseverance and unyielding energy which enabled their unknown builders to accomplish such immense works with such limited means, without iron, without machinery, unless of the simplest and rudest kind, and without domestic beasts of draft. If they lacked a knowledge or appreciation of the arch, they supplied its place with massive stone lintels, which have sturdily resisted the wasting wear of time and seasons, while so many of the hard travertine arches, every stone of which was nicely fitted, that supported the Coliseum, or stretched away for miles across the Campagna for the support of the Roman aqueducts, have crumbled and fallen to the ground. In the convenience these ancient dwellings afforded to their inmates did they alone equal the residences of their contemporaries of the Old World.

It is only in quite modern times that the votaries of architecture have bent their energies to develop the greatest amount of practical utility in planning structures for the accommodation of man, without sacrificing those other elements which so exclusively engrossed the ancients. In this regard alone may the present generation claim to be far in advance, in architectural design, of the time when St. Sophia was built at Byzantium. Michael Angelo exhausted all his genius and all his powers on St. Peter's, and yet its ancient neighbor across the Tiber stands its perpetual rival to excite the admiration of the world, though vastly inferior in magnitude. For actual convenience St. Peter's scarcely excels the Pantheon. It was the fault of public appreciation. The architect met, and more than met, the public demand. Architecture, like everything else, while to some extent it leads, must necessarily obey, public tastes and public requirements.

The requirements which public appreciation of human comfort and convenience have demanded have stimulated modern architecture, till they are now answered in a remarkable degree, without impairing the admirable features of the ancient orders. In adopting the plans proposed for the structure whose corner-stone has just been laid, these elements of utility have been no less studied than those which almost exclusively engaged the attention of the great masters who have gone before us, and who have left such wonderful monuments of their genius; it is most fitting that the commencement of this great task shall crown the first half century of our State's existence, and it is a source of especial pride to her citizens, that the manifest merits of the plans presented by one of her own sons secured their adoption.

To that ancient and honorable order, whose services have been required in laying this corner-stone, is the world indebted not only for the preservation, but for the creation, of the science of architecture. From the building of the great Temple by the wise king of Israel for the worship of Israel's God, to the present day, Freemasonry has been identified with all the great architectural works throughout the civi-

lized world, and there is no reason to doubt that such will be the case in the future. Amid the dark gloom which overshadowed the world during the Middle Ages, when war and bloodshed were alone thought worthy of greatness, and constituted the sole ambition of rulers and of peoples, the venerable Order of Freemasonry protected, beneath the shades of its mystic rites and ceremonies, and preserved to a world more enlightened, those architectural designs which had for so many centuries been the admiration and the study of the ages. During that long, sad period of seven hundred years, in those secluded recesses where met the brethren, the incense of light and truth and love perpetually burned on their altars. There FAITH, HOPE, and CHARITY exemplified their beautiful influence upon the hearts of men, and led them to look for the dawn of a brighter day, when the light of a higher civilization should break forth and dispel the dark pall which then enveloped the world; when the tide of blood and carnage which that veil could not hide from future generations should be stayed; and the fruition of FAITH and HOPE should be realized in the exercise of CHARITY to all mankind. When that time came which the ancient brethren so clearly saw, and so ardently longed for, our ancient Order emerged from its constrained obscurity, and displayed to an admiring world the beauties of that art which it had with so much care and devotion preserved throughout that long, dark, and gloomy period.

Under the patronage of more enlightened rulers and more appreciative peoples, the honorable brotherhood spread itself over every country in Europe, and erected all those stately structures which still stand as modern monuments of the ancient arts, which had been thus preserved in the mystic lodges of Freemasonry. If occasion does not permit it now to show in the same way its devotion to the good of man, still Masonry finds a broad field for the exercise of its energies for the promotion of human happiness; from which, I trust, it may never be allured by the smiles of prosperity nor driven by the frowns of adversity.

VIII.

OLD CHICAGO.

REPLY, ON BEHALF OF THE OLD SETTLERS OF CHICAGO TO THE WELCOME GIVEN BY THE CALUMET CLUB, AT ITS RECEPTION, MAY 27, 1879.

The Calumet Club, representing the wealth and culture of Chicago, invited to its parlors all persons whose advent to the city dated back of the year 1840, and a special effort was made to bring together at the reception all those whose life had been coincident with the growth of Chicago. A large attendance was secured, and General Henry Strong, in behalf of the club, delivered an address of welcome to the survivors of the founders of Chicago. It was in response to this address that Judge Caton spoke, taking the chair and acting as president during the remainder of the evening.

GENTLEMEN OF THE CALUMET CLUB, — The pleasing duty has been assigned me by my associates of years gone by of expressing our feelings towards you for your kind words and generous hospitality. It is a task I feel quite unable to perform. Words are wanting adequately to express the sensibilities which are awakened in the bosom of each one of us — whom your generous forethought has brought together here — who forty years or more ago made the little hamlet of Chicago our home, and devoted our energies to laying the foundations of this great city. It is gratifying to us to know that, as we are passing down the road that ends, — where, we cannot see, — those who are rising up to take our places in the labors of life feel kindly toward us and appreciate what we have done, or, at least, attempted to do. As I look about me and see gathered here friends of so many years ago, I am transported back to the time when

we were all young. Even then there were old men here, at least so they seemed to us, among whom I may recall Colonel Jean Baptiste Beaubien, Dr. Elijah D. Harmon, and John Wright. They have long since passed away, but their names should never be forgotten. The old men called us boys then, with more main-spring than regulator, but we thought we were well-balanced men. You call us old men now, but we feel somewhat boyish still. It is a pleasant retrospect to go back in memory forty years — let me go back forty-six years, when I here set my stake and commenced the business of life. There were then not two hundred people here. I was an old resident of six weeks' standing before two hundred and fifty inhabitants could be counted to authorize a village incorporation under the general laws of the State. Colonel Beaubien presided at that meeting, and at his request I sat beside him as prompter, for official honors and responsibilities were new to him.

When we had attained the dignity of a village corporation, with the wild waters of the lake on the one hand, and the broad and brilliant prairie, still untouched by the husbandman's plowshare, on the other, we thought we were a great people, and even then, though feebly, discounted the future of Chicago. Of those who were present at that memorable birth, I rejoice to see many here before me. How can I express our feelings of gratitude to that Divine hand which has so long sustained us, and bounteously lengthened out our days, and again brought us together under conditions of so much happiness, and in the enjoyment of so goodly a measure of health. I think I can count twenty, at least, who were here forty-six years ago, when Chicago had no streets except on paper; when the wild grass grew and the wild flowers bloomed where the court-house square was located; when the pine woods bordered the lake north of the river, and the east sides of both branches of the river were clothed with dense shrubbery forests to within a few hundred feet of their junction. Then the wolves stole from

these coverts by night, and prowled through the hamlet, hunting for garbage around the backdoors of our cabins. Late in 1833 a bear was reported in the skirt of the timber along the South Branch, when George White's loud voice and bell — he was as black as night in a cavern, his voice had the volume of a fog-horn, and he was recognized as the town-crier — summoned all to the chase. All the curs and hounds, of high and low degree, were mustered, with abundance of fire-arms of the best quality in the hands of those who knew well how to use them. Soon Bruin was treed and dispatched very near to where the Rock Island dépôt now stands. Then was the time when we chased the wolf over the prairies now within the city limits, and I know some here were of the party who pursued one right through the little hamlet and on to the floating ice near old Fort Dearborn. Oh, those were glorious times when warm blood flowed rapidly, no matter how low stood the mercury. Then in winter the Chicago River was our skating-rink and our race-course. Let me ask John Bates over there if he remembers when we skated together up to Hard Scrabble, — where Bridgeport now is, — and he explained to me, by pantomime alone, how the Indians caught musk-rats under the ice? And let me ask Silas B. Cobb if he remembers the trick Mark Beaubien played on Robert A. Kinzie to win the race on the ice that winter? See, now, how Mark's eye flashes fire and he trembles in every fibre at the bare remembrance of that wild excitement. This was the way he did it. He and Kinzie had each a very fast pony, one a pacer and the other a trotter. Mark had trained his not to break when he uttered the most unearthly screams and yells which he could pour forth, and that is saying much, for he could beat any Pottawatomie I ever heard, except Gurdon S. Hubbard and John S. C. Hogan. The day was bright and cold. The glittering ice was smooth as glass, the atmosphere pure and bracing. The start was about a mile up the South Branch. Down came the trotter and the pacer

like a whirlwind, neck and neck, till they approached Wolf Point, or the junction, when Kinzie's pony began to draw ahead of the little pacer, and bets were two to one on the trotting-nag as he settled a little nearer to the ice and stretched his head and neck further out, as if determined to win if but by a throat-latch. It was at this supreme moment that Mark's tactics won the day. He sprang to his feet in his plank-built pung, his tall form towering above all surroundings, threw high in the air his wolf-skin cap, frantically swung round his head his buffalo robe, and screamed forth such unearthly yells as no human voice ever excelled, broken up into a thousand accents by a rapid clapping of the mouth with the hand. To this the pony was well trained, and it but served to bring out the last inch of speed that was in him, while the trotter was frightened out of his wits, no doubt thinking a whole tribe of Indians were after him, and he broke into a furious run, which carried him far beyond the goal before he could be brought down. Hard words were uttered then, which it would not do to repeat in a well-conducted Sunday-school, but the winner laughed and pocketed the stakes with a heartiness and zest which Mark alone could manifest.

There is an inspiration in the memory of those glorious days of fun and frolic which quickens the pulse to full youthful vigor, and now to see so many of those around me who were the life and soul of those hilarious times transports me back to them, and makes me feel as if no long years of toil had rolled along since then. We forget for the moment the intervening time, and remember only the broad, unbroken prairie, which then extended for miles around the spot where this hall stands. But you must not think that all our time was spent in fun and frolic. Our sports were but episodes, while our days and nights were spent in labors inspired and sustained by vigorous health, indomitable will, and a full appreciation of the life-long task before us. We felt and knew that wisdom and energy

and industry could alone build up such a city as its geographical position seemed to require. The spirit manifested by those who commenced the work would be likely to make its impress upon the teeming throngs which were already hastening to join us from the east and the south, and the wonderful work wrought by those who joined and came after us, and which have just been so truthfully and so eloquently described, we flatter ourselves were in part at least the followings of what we began.

To us of the olden time, who as your guests feel ourselves so much honored, contrasts are continually presenting themselves. Then and now ever present themselves side by side. Here I commenced my judicial career at the age of twenty-two as a justice of the peace. On the 14th of July, 1834, a judicial election was held in this town, including the village and surrounding country, for one justice of the peace. The canvass was very warm and active by the friends of the two candidates, though no party politics were involved in the contest, as I think there never should be in judicial elections. One candidate received 172 votes, and the other received 47 votes. But 219 voters could be found in Chicago and vicinity. Probably this was the last election ever held here when every voter came to the polls. Indeed, I regret to say that the most enterprising and thorough-going men here have rarely taken time to go and vote, and their example has been too largely followed, though not by the baser sort. At the last presidential election, three years ago, Chicago polled 62,448 votes, and yet a large number of voters took no interest in the matter, or at least took more interest in their stores or their shops. I doubt if much more than two thirds of the voters in this city have voted since 1840. How can we resist noticing the contrast between 219 in 1834, and 62,448 in 1876, especially when we remember that the latter number was heavily handicapped.

On that same 14th of July an event occurred of a commercial character which should render it memorable, and

deserves to be recorded. On that day the first commercial vessel passed the piers into the Chicago harbor — the *Ariadne*, Captain Pickering. Early on that morning the friends of the successful candidate assembled at the piers, which consisted of a few wooden cribs, and dragged the schooner across the bar into deep water, where all got on board and sailed in her up the river to the point where the election was held, shouting merrily, and were answered by those on shore manifesting an appreciation of the important event. She was gayly decorated with all the bunting which could be raised, and we thought presented a splendid appearance, the rigging manned by all who could climb the shrouds. This kindled an enthusiasm which lasted till the last vote was polled, and no doubt contributed more to the success than the merits of the candidate. The most active and efficient man on that day, as I remember, was the late George W. Dole, who was always thoroughly in earnest, whether electioneering for a friend or attending to his commercial affairs. His memory should be ever cherished, and his name never forgotten when the founders of this city are recalled.

The contrast in the hotels and of the mode of living in Chicago is scarcely less striking. The first night I slept in Chicago was in a log-tavern, the name such hotels went by then, west of the junction of the rivers, kept by W. W. Wattles. The next day I learned that the best entertainment was to be had at the crack boarding-house of the place, kept by Dexter Graves, at five dollars per week. It was a log-house near the middle of the square, just north of the present Tremont House. If it was a log-house I assure you we had good fare and a right merry time too. There were seven beds in the attic, in which fourteen of us slept that summer, and I fear we sometimes disturbed the family with our carryings on o' nights. I know of but one of those fourteen boarders besides myself now living. Edward H. Haddock knows who slept with me in that attic. Haddock was a sly fellow then, for before one of us suspected what he

was at, he made sure of the flower of that family, and a real gem of priceless value she was, who still survives to promote the happiness of those around her. Young ladies were in demand here in those days.

The first frame tavern ever built in Chicago was by Mark Beaubien, upon whose geniality advancing years seem to have no influence. I am sure there are some here present who were then his guests. There he kept tavern, to use his own expression at the time, like — (the speaker hesitated. A voice — "How?") Shall I say it, Mark? (Mr. Beaubein answered, "Yes!") Well, then, he said he kept tavern "like hell!"

To go back to that primitive time, and to think of those who are gone and those who are left, we may gratefully acknowledge that a very large proportion have been spared through so many years of active life. General Strong has recalled the names of a number of the prominent early settlers of Chicago who have passed beyond the reach of your hospitality. Allow me to recall the names of two who have been taken from the ranks of my own profession, and who came to Chicago the same year with myself — 1833. Their learning and their talents would have made them conspicuous at any bar. All who knew them will join me in paying a tribute of respect to the memories of Giles Spring and James H. Collins. Besides these there were several other lawyers established in Chicago during the same year, among whom I may mention the name of Edward Casey, a most genial gentleman. All of these are long since gone, and I alone am left to represent that earliest Chicago Bar.[1]

[1] Here a question was raised by some of the old-timers as to whether Mr. James H. Collins came in the year 1833, but Judge Caton settled it, stating that he finished his legal studies in Mr. Collins's office in New York, and came directly thence to Chicago, when he wrote back to his former preceptor an account of the country, on the receipt of which Mr. Collins made his arrangements to come west, and arrived in Chicago in September, 1833, and in February following Judge Caton entered into partnership with Mr. Collins in the practice of the law, constituting the firm of COLLINS & CATON.

To those who have not been eye-witnesses, it seems incredible that in the adult lifetime of so many of us here present a city of half a million of inhabitants has grown up from nothing, and that what was then a rich wild waste for five hundred miles or more around has been subdued, cultivated, and populated by millions of hardy, industrious, and intelligent agriculturists. The marvel is the growth of the country rather than the city. The latter was compelled by the former, and indeed has never kept pace with it.

Still, to those who have witnessed all this, it seems more like a dream than a reality. Many who have not witnessed the growths of cities and country in this occidental land can hardly believe that he who addresses you now opened the first office for the practice of the law in Chicago. They have often called me the father of the Chicago Bar, and proud I am of such a progeny. In numbers they are truly great, and in ability, in learning, in integrity, and in patriotism I will proudly compare them with any other bar in the United States. I have ever tried so to bear myself that no one should blush at the mention of my name, and I most gratefully acknowledge that they have always shown me a filial affection, ever treating me with the greatest respect and confidence, omitting no opportunity to do me honor. This is a consoling reflection and a sweet experience in the decline of life.

Would time permit, it would not be unbecoming in me to follow my friend, who in your behalf has extended to us so cordial a welcome, in the great changes which have been here wrought in so short a time — for, remember that the period of one human life is but a day in the life of a people; but I must forbear. Really it seems like mystery that what was but yesterday a very little village — for it seems but yesterday that I was a very young man — has to-day grown to be so great a city. Sometimes despotic power has builded cities in the frozen north and in the genial south; but a Peter and a Constantine, with national resources, could never equal the magic results which we have here witnessed

as the voluntary works of freeborn enterprise, — here in the temperate zone, where no ancient civilization had left its work. It lacks but antiquated ruins and crumbling columns to persuade the traveller that he is in some great city of the Old World, where modern architecture has wiped out many of the evidences of departed grandeur and supplied its place with the improvements of later times. But the end is not yet. If we saw the very beginning, you, too, have seen but the beginning. When the youngest man among you shall have passed through the active scenes which lie before him, and shall feel that his work is nearly done, he will stand amid a succeeding generation, and tell those who shall have arisen to take the places of him and his contemporaries of what he remembers of the present time as of the beginning of Chicago, or at least of its early youth. Then our voices will be hushed, to be no more heard forever, and may we not fondly hope that he will still kindly remember us, and that we here lived and labored before his time. So, too, may we hope that this Calumet Club may flourish those forty years or more to come, and that its members still will stretch forth the hand of welcome to those who shall survive from now to then, as cordially as you have extended your courtesies to us.

If we have talked only of Chicago and its progress, we must not forget that Chicago is not phenomenal, but it is the whole great west that is phenomenal. We have other great cities in this grand, magnificent valley, whose growth, whose enterprise, and whose greatness should equally command our admiration; many of whose early founders are yet spared to hear the expressions of gratitude, and to receive the honors which they so richly deserve. Let us not say that there is a rivalry between these great cities of the west; but there is a noble emulation as to which shall do most for the honor and the glory of our beloved country.

Nothing would be so agreeable to me as to talk to you by the hour of ancient Chicago, when the wild waters of the lake, on the one hand, were rarely vexed by the ships

of commerce, and the wild flowers which covered the broad prairies, on the other, were undisturbed by cultivation, and uncropped by flocks and herds — save the wild deer that roamed at large over their broad bosoms; but I fear you will think I am becoming a little senile in my enthusiasm. Especially do I like to talk of the olden times, when I see around me so many of those old-time friends, with some of whom I have not clasped hands for twenty or thirty years. Here is my old friend, Mark Beaubien, of whom I have so often spoken — because he is so worthy of mention, and because his name is so closely interwoven with all our sports and joyous gatherings, when we were all young together. He used to play the fiddle at our dances, and he played it in such a way as to set every heel and toe in the room in active motion. He would lift the sluggard from his seat, and set him whirling over the floor like mad! If his playing was less artistic than Ole Bull, it was a thousand times more inspiring to those who are not educated to a full appreciation of what would now create a *furore* in Chicago; but I will venture the assertion that Mark's old fiddle would bring ten young men and women to their feet, and send them through the mazes of the dance, while they would sit quietly through Ole Bull's best performances — pleased, no doubt, but not worked up to such enthusiasm that they could not retain their seats. That was long years since; but if he has that same old fiddle still, he can, I doubt not, draw the bow now in such a way as to thrill those at least in whom it will awaken pleasing memories of days and nights when young blood coursed wildly, and joy was unrestrained. To show you that this is so, and how he did it then, I call on him to play some of those sweet old tunes, if he has that same old fiddle yet.

Mark Beaubien had not forgotten his ancient cunning, and taking an old violin which he averred to be the one he handled forty years before, struck up "Money Musk," "The Devil's Dream," and the "Indian Solo," the last tune bringing out Mr. Gurdon Hubbard, who went through the Indian dance to the great admiration of the company.

IX.

ORIGIN OF THE PRAIRIES.

A PAPER READ BEFORE THE OTTAWA ACADEMY OF NATURAL SCIENCES, DECEMBER 30, 1869.

I PROPOSE to offer some observations on the origin of the prairies, though it may seem like presumption in me to attempt the discussion of a subject which that greatest of nature's students, the immortal Humboldt, seems studiously to have avoided. He describes to us all the prairies of the world, a great portion of which he had personally examined. He gives us their area, their geography, their topography, their surroundings, their components, and their products, but gives us no word of suggestion or explanation why they are destitute of trees, when surrounded everywhere by forests. This, indeed, seems very remarkable in one who was, perhaps, the most extraordinary man that ever lived for observing, studying, and explaining every interesting phenomenon in nature. Why has not he, the most able of all men to discuss it, favored us with his views on this subject? We are hardly at liberty to suppose it was a mere oversight, and are loth to believe that he considered the inquiry of so little importance as to be unworthy of his notice. This would be too severe a reflection upon all those who have since considered the inquiry worthy of the most serious consideration. Since his time it has been the subject of much study and of many and conflicting theories. Although he, whom of all others we should listen to with the greatest interest, in answer to this inquiry, has, so far as I know, not chosen to enlighten us with his views, yet the origin of the prairies is

a theme which has commanded the attention of many, both of those whose eminent attainments entitle them to the appellation of learned, and those who occupy the prairies but make no pretensions to learning. By the former, theories have been advanced and elaborated and placed on record, some of which are quite inconsistent with others, so that all of them, at least, cannot be true; and probably we should not be very far out of the way should we conclude that some errors have crept into all, and also that none of them are entirely destitute of truth. Indeed, we are sometimes inclined to the belief that each one has written as if called upon to advance something entirely original, and this may have led some to the very borders of absurdity, and would almost induce the belief that their authors had never seen a prairie. Upon this, as upon all other subjects where we must depend upon evidence to lead us to correct conclusions, it is indispensable that we proceed upon facts, and, so far as possible, all the facts which can enlighten our judgments upon the subject. The very moment we proceed upon assumed facts which in truth do not exist, then most likely the first step will be error, and so we shall be led by false lights to the very end, and it will be remarkable if our conclusions are not erroneous.

All men, and especially the learned, are, perhaps, too prone to theorizing, and such is the weakness of human nature that when a theory is once formed and announced, it is our child, our offspring, our fondling, and we seem to feel the obligation of a parent ever after to maintain and support it. Though, as it grows up, it may become deformed and ugly, and unworthy of our further care, it requires the stoicism of the Roman father to discard it and order its execution. All manner of violence is done to facts to win support and sustenance for the bantling, and every grain of proof in its defense is made to weigh a pound. Each of the theories which have been advanced on this subject undoubtedly has some facts for its support, and possibly may

account for the formation of some prairies; but neither is capable of accounting for all prairies. Hence I conclude that various causes have contributed to the formation of the prairies. It may be that some prairies have been formed by processes entirely different from those which have formed others.

But, first of all, in the discussion of this subject as of all others, it is necessary to have a distinct understanding of the subject to be discussed. We must know precisely what particular facts are to be explained, what phenomena are to be accounted for. There are two distinct elements to be considered in the discussion of this subject. The one is the deposition of the soils and the configuration of the surfaces of the prairies; and the other is the absence of arborescent vegetation upon them, in what may be termed their natural state, while they are clothed with a rich coat of herbaceous vegetation. So it will be seen that I only propose to discuss what may be called the fertile prairies, leaving entirely out of view those arid deserts formed in many portions of the globe where rains are so seldom that few varieties of the vegetable kingdom can exist without artificial irrigation.

My attention has been lately recalled to this subject by the reperusal of a paper prepared by Professor Leo Lesquereux for the "Report of the Geological Survey of Illinois," and published in that report, vol. i., page 238. By that publication it has become the property of our State, and invites the criticism of all her citizens, thousands of whom have devoted much study to the subject, with better means of understanding it than is possible to one whose observations are confined to a mere superficial examination of them, as was evidently the case with the learned author of this paper, as I think I shall show before I conclude, although I attempt it with the greatest deference and respect for such high authority.

The theory of the learned professor may be briefly stated thus: Prairies were originally formed in the shallow mar-

gins of agitated waters, either lakes or running streams. By the agitation of the waters of lakes, drifting material is thrown up at a greater or less distance from the shores, forming dams or dikes, which serve to cut off shallow sections of water from the main body. These shallow ponds of water, being protected from the agitations of the main body, become the habitat of aquatic plants, which in successive crops decay and are reproduced, thus contributing to fill up the shallow pools, which end is also promoted by atmospheric deposits and the growth and decay of animal aquatic life, until finally the bottom of the pent up waters is raised above the surface, and a prairie is formed. The same process is repeated along the margins of the rivers, where similar deposits are made in the still waters on either side of the active current, which cuts off sections of shallow water into quiet ponds along the river bottoms, which become filled up and are converted into prairies in the same way. The paper says: "This peculiarity of formation explains, first, the peculiar nature of the soil of the prairies. It is neither peat nor humus, but a black, soft mold, impregnated with a large proportion of ulmic acid, produced by the slow decomposition, mostly under water, of aquatic plants, and thus partaking as much of the nature of peat as true humus. In all the depressions of the prairies, where water is permanent and unmixed with mineral matter, the ground is true peat. It is easy to understand why trees cannot grow on such kind of ground."

Now, the first criticism which the consideration of this theory invites is, that it assumes that all prairie soils are of the same character and constituents, and hence the conclusion that they were all formed in the same way and are alike unfitted to the growth of trees.

All familiar with the prairies, even the most superficial observers, know that this is not the case. There is almost, if not quite, as great a variety of prairie soils as of woodland soils. Scarcely one acre in the thousand of the great

prairies of Illinois and Iowa would be recognized by this description. Peat bogs, as described by our author, are frequently met with, and sometimes bordering them the kind of soil he describes where ponds have been filled up and converted into marshes, and these, by a continuance of the same process, have finally become dry prairies; but a very large proportion of our dry prairies abound in true humus, while many are scantily furnished with vegetable matter. Such is the character of all our sandy prairies, a striking example of which is found near Pekin, in this State, stretching clear away to the banks of the Mackinaw, and even beyond it. Of the same character, also, are the prairies at Peoria, at Chillicothe, at Lacon, at Hennepin, at Henry, and twenty others in Illinois which I could name. This soil is as permeable to the atmosphere, and as accessible to oxygen, as any soil capable of sustaining vegetable life.

Surely these prairies are not treeless because the seeds of arborescent plants deposited on or in them are not accessible to the oxygen necessary for their development, which is, in fact, the only reason which the writer assigns for the absence of trees on the prairies. He says, immediately after my last quotation: "The germination of seeds of arborescent plants needs the free access of oxygen for its developments, and the trees, especially in their youth, absorb by their roots a great amount of air, and demand a solid point of attachment to fix themselves. Moreover, the acid of this, by its particularly antiseptic properties, promotes the vegetation of a peculiar group of plants principally herbaceous." The truth is, all the vegetation found on the high prairies requires the accessibility of oxygen to its roots for its proper nutrition — nay, its vitality. Transfer the grasses on the rolling prairies into the swamps, or even the humid soil of the swales, and they will die as if burned with fire. The vegetation upon the prairies changes as they become drier, no matter from what cause. Artificial draining produces this effect with appreciable rapidity. This, no doubt,

is not entirely owing to the absence of stagnant water in the soil, but also to the absence of certain salts, which have been washed out by affording a passage to the water percolating through the soil. Although I cannot assert from actual analysis that this change takes place in the constituents of the soil by the process of draining, I think it is not a hazardous conjecture to suppose so, nor is it more unreasonable to suppose that the pores left vacant by draining off the water are directly filled by air, and the soil also at once supplied with an abundance of oxygen necessary to the vitality of a new class of vegetation, which succeeds the old. The difference in the vegetation found on the different prairies, or on different parts of the same prairie, testifies to the different constituents in their soils. So soon as the soil is raised above the water, atmospheric air will penetrate it more and more, in almost the exact ratio that it becomes drier. Both mechanical and chemical changes are thence continually going on; in like manner the constituents of the soil continually are changing, and the character of the vegetation found upon them changes, so that the soil will always be covered with some class of vegetation to which it is adapted. But it does not follow that all the kinds of vegetation which the soil is adapted to sustain will be found there. Indeed, but a very few may be looked for. The selection of those that are found and the exclusion of those absent are determined by causes quite independent of the constituents of the soil. They are dependent upon accidental causes.

The theory under consideration also assumes that the subsoil of the prairies is uniformly clay. A more intimate acquaintance with the prairies would have corrected this misapprehension. The super-soil of the prairies sometimes rests upon gravel and sometimes upon rock, and sometimes this gravel subsoil, at a greater or less depth, rests upon either a stratum of clay or upon rock. An example of the former may be found on the east side of the Du Page River,

above Plainfield, in this State, — where we have the exceptional case of the entire absence of timber along the borders of a considerable river for many miles, — and in many places along the Fox River. Also near Lisbon and at Joliet, we find the soil resting upon rock, with no clay interposed. Near Lisbon, particularly, this is found on the high, rolling prairie, far away from the river bottoms and from timber. I might cite many similar examples, but it is unnecessary. The vegetation covering all these, when not controlled by the humidity of the soil, is substantially the same, but neither the surface or the subsoil has in general anything to do with absence of arborescent vegetation.

That the prairies — that is, the land itself — have been formed under water, except the very limited portion of the surface which has been added from decomposed animal and vegetable matter since their emergence, will not be questioned by any one of the least observation; but that is not the main question involved in the present inquiry. Why are they not covered with forests? It is the cause of this feature which Professor Lesquereux undertakes to explain. His theory of the territorial formation is introduced solely for the purpose of explaining this phenomenon, and fails to explain it, at least to my satisfaction.

If the Grand Prairie of Illinois was formed under water, from which it emerged by a slow process of elevation or by subsidence of the waters, a theory to which I am prepared to assent, or if it was formed piecemeal by having one section of shallow water, and then another, cut off from the main body by the accumulation of deposits by the agitated waters, as described in the theory under consideration, then the lands now covered by the immense forests lying north and east of us, in Wisconsin, Michigan, Indiana, and Ohio, and of the same general altitude, were formed in the same way; and if this process of formation is the true cause why trees are not found on our prairies, then the same cause should have produced the same effect there. But more, if this

theory be correct, then the latest formations of land should be nearest the great bodies of water from which they have been detached, and less congenial to the growth of trees, and we should expect to find the forests most remote from the waters. Now the very reverse of this is found, in fact, to be the case. At one single point alone does the Grand Prairie abut on Lake Michigan, and that for a short distance of four miles south of the mouth of the Chicago River. The great forests of Indiana are in the north part of that State, and we must go south of those forests to find her large and luxuriant prairies. In northwestern Indiana we find those large swamps, which may have been cut off from the waters of the lakes in the manner supposed by Professor Lesquereux, and which are now in the process of being filled up; but it is a remarkable and interesting fact, that wherever a point, no matter how small, in any of these great marshes has been raised above high water it is covered with trees. No traveler can pass over the Pittsburg, Fort Wayne, and Chicago Railroad, for instance, without having his attention arrested by the innumerable islands, all covered with trees, rising everywhere out of this great marsh, all with surfaces but a very few feet above the water. If he has ever passed down the St. Lawrence, among the Thousand Islands, he is at once reminded of the fact by the similarity of the relative location, size, and number of the islands. I have in vain sought among these marshes for a dry place devoid of trees, except on the dikes themselves, portions of which may be found quite destitute of any vegetation, the dry sand affording sustenance to none.

That these marshes once formed a portion of the body of the lake, and have been cut off from it by dikes thrown up by agitated waters, may be true. Indeed, these dikes are as readily traced to-day as are the shores of the lake or the borders of the marshes themselves; but they are not uniformly overgrown with trees, as is supposed by the author of the theory under consideration. More than thirty-five

years ago I examined one of the most remarkable of these ridges, south of where the village of Thornton now stands. It is composed principally of compact gravels, as straight as possible, nearly north and south; I should think, perhaps, three hundred feet wide, and elevated, probably, ten feet above the marshes on each side. It is as regular in its grade as if thrown up by the hand of man, under the direction of a skillful engineer, and constitutes the most beautiful natural drive I ever saw, and, I understand, is now used as a public road. Not a tree was standing on it, nor was there evidence that there had ever been one. The soil was light, but sufficient to sustain the pine or the black oak.

Although it is reasonable to suppose that this dike cut off the waters to the west long before the waters to the east of it were separated from the lake by a similar process, yet the marsh on the west was not, and I venture to say is not now, elevated appreciably more than on the east. This may serve to teach us how extremely slow is the filling up process of these marshes, even after they have been elevated so as to become passable to animals, and are annually covered with a heavy growth of grass, — so slow, indeed, that it is inappreciable from one generation of men to another. I accept this as an evidence of the formation of some prairies in the manner supposed by our author, but not as a reason why they are destitute of trees. It seems to me that he does not sufficiently appreciate the effect of the chemical and mechanical action of the elements upon all things above the waters even in a short period, as reckoned by geological time, in which the life of man is so short as to be hardly an appreciable moment, and the entire historic period is scarcely long enough for a single breath. Although, geologically speaking, we can consider this a new country, yet time enough has elapsed since these high prairies were first elevated, or rather, I will say, were last elevated above the waters, to add to them something, at least, from animal and vegetable deposits and particles floating in the atmosphere, though

slow indeed has been and will be this accumulation upon the surface, when accelerated or retarded by human industry.

Through the changes of accumulating ages, the soils of our prairies and woodlands have, no doubt, at different times, been adapted to the healthy growth of almost every variety of vegetation of the temperate zone, both herbaceous and arborescent, nor do I think it unreasonable to suppose that not only our present prairies, but the great forest land covering the plains which spread away clear to the foot of the mountains east of us, may have been many times clothed with heavy forests, and these again denuded to naked prairies. It is a familiar fact that places have been found covered with what appeared a primeval forest of hard wood, showing abundant remains of a growth of pine, which must once have occupied the same place. No fact is better settled in agricultural science, than that any particular crop of vegetation, if long continued, will in time exhaust the element necessary to its vigorous growth, when, if vegetation requiring a different element be substituted, it will grow with peculiar luxuriance. Hence the necessity for rotation of crops, which has been thus enforced by the laws of Nature herself long before man appreciated its utility or adopted it in practice. When the vegetation is not taken from the ground, but is allowed to return to it, the process of exhaustion is no doubt retarded to a certain extent but is not entirely arrested; and hence we see this rotation of crops wrought out by the hand of Nature itself, although at longer intervals than is required for the husbandman.

I entirely concur in the popular opinion that among the most important of the causes which have produced this interesting result is fire, while the exhaustion and replenishing the soil with particular elements have, no doubt, had their influence. The opinions of the first settlers on the prairies, who are often good observers of many phenomena, are entitled to respect, and, so far as I am aware, they universally attribute the absence of trees from the prairies to the period-

ical fires which swept over them, overlooking, no doubt, many minor causes. The hard, impenetrable character of the sward, formed by most of the herbaceous vegetation of the prairies, forms a serious impediment to the germination of seeds of trees, when, by accident, they fall upon it. It is not the composition of the soil which prevents the germination of this class of seeds, but whatever difficulty is experienced in this regard arises from the mechanical cause above suggested. The herbaceous vegetation which covers the prairies is furnished with an immense number of very strong roots, far more so than any of the tame or cultivated grasses. In general, these form a complete mat on the surface, and penetrate to a great depth. They are often met with of a considerable size at a depth of six or eight feet. The extraordinary system of capillary roots with which they are furnished enables them to remain green and vigorous during the long drouths, which much more frequently occur on the prairies than in the timbered lands and in mountainous countries, during which the cultivated grasses, and even the clover with its long tap-roots, greatly suffer. These long drouths, no doubt, also exert their influence to prevent the germination of arborescent seeds on the prairies, or to destroy the young plants, or, at least, to prepare them for certain destruction when the autumnal fires shall sweep over them.

It is a familiar fact to all careful observers that fire is much more destructive to the vitality of arborescent than to herbaceous plants, *cæteris paribus*. A fire that will destroy the last vestige of life in a tree of considerable size will leave the roots of the grasses surrounding it unharmed, from which will spring a more luxuriant growth the succeeding season. Indeed, it is a most interesting fact, familiar to all the early settlers, who depended upon the prairie grasses for pasturage and for hay, that a much more luxuriant growth is produced on the prairies where the old grass is burned off than where it is allowed to remain and decay upon the ground. I have in person often made careful observations on this

subject, and uniformly with the same result. The farmer does not burn off the old grass in the fall solely that it may not obstruct the scythe when mowing the next year's crop; but the most casual observation will show one that the actual growth of grass is ordinarily at least one third greater where the old grass has been burned off in the fall. I shall not stop now to explain why this is so, although I think it susceptible of a most satisfactory solution, but at present content myself with the fact that the roots of the prairie herbage are not injured by a very considerable degree of heat where even large trees would be liable to be destroyed. What, then, must be the fate of the tree of but a few months' growth? Utter annihilation seems absolutely inevitable. So long as the prairies are subject to the annual conflagrations, to which they are so much exposed in a state of nature, there is a manifest cause why trees get a lodgment on them with so much difficulty.

While I make no question with Professor Lesquereux as to the process by which the marshes or swamps in the vicinity of some of our lakes and rivers have been formed, or the reasons why trees do not grow in them, conceding that perpetual stagnant water is destructive of arboraceous vitality, his error, I conceive, consists in carrying the proposition too far, and applying it where the existing conditions render it inapplicable, — in extending it from the marshes perpetually covered with water to the high, rolling prairies, where none of the conditions exist which prevent the growth of trees in the stagnant waters of the marshes. The cause of the absence of trees on the upland prairies is the problem most important to the agricultural interests of our State, and it is the inquiry which alone I propose to consider; but I cannot resist the remark that wherever we do find timber throughout this broad field of prairie, it is always in or near the humid portions of it, — as along the margins of streams, or upon or near the springy uplands. Many most luxuriant groves are found on the highest portions of the uplands, but

always in the neighborhood of water. For a remarkable example, I may refer to that great chain of groves extending from and including the Au Sable Grove on the east and Holderman's Grove on the west, in Kendall County, occupying the high divide between the waters of the Illinois and the Fox rivers. In and around all the groves flowing springs abound, and some of them are separated by marshes, to the very borders of which the great trees approach, as if the forest were ready to seize upon each yard of ground as soon as it is elevated above the swamps. Indeed, all our groves seem to be located where water is so disposed as to protect them, to a greater or less extent, from the prairie fire, although not so situated as to irrigate them. If the head waters of the streams on the prairies are most frequently without timber, so soon as they have attained sufficient volume to impede the progress of the fires we find, with very few exceptions, forests on their borders becoming broader and more vigorous as the magnitude of the streams increases. It is manifest that lands located on the borders of streams which the fires cannot pass are only exposed to one half the fires to which they would be exposed but for such protection. This tends to show, at least, that if but one half the fires that have occurred had been kindled, the arboraceous growth could have withstood their destructive influence, and the whole surface of what is now prairie would be forest. Another confirmatory fact, patent to all observers, is, that the prevailing winds upon the prairies, especially in the autumn, are from the west, and these give direction to the prairie fires. Consequently, the lands on the westerly sides of the streams are the most exposed to the fires, and, as might be expected, we find much the most timber on the easterly sides of the streams.

Another fact, always a subject of remark among the dwellers on the prairies, I regard as conclusive evidence that the prairie soils are peculiarly adapted to the growth of trees, is, that wherever the fires have been kept from the groves by the settlers, they have rapidly encroached upon the prai-

ries, unless closely depastured by the farmer's stock or prevented by cultivation. This fact I regard as established by careful observation of more than thirty-five years, during which I have been an interested witness of the settlement of this country, — from the time when a few log-cabins, many miles apart, built in the borders of the groves, alone were met with, till now, when nearly the whole of the great prairies, in our State at least, are brought under cultivation by the industry of the husbandman. Indeed, this is a fact as well recognized by the settlers as that corn will grow upon the prairies when properly cultivated. Ten years ago I heard the observation made, by intelligent and observing men, that within the preceding twenty-five years the area of the timber in the prairie portions of the State had actually doubled by the spontaneous extension of the natural groves. However this may be, certain it is that the encroachments of the timber upon the prairies have been universal and rapid, wherever not impeded by fire or other physical causes, without regard to the constituents of the soil.

The manner and progress of the encroachments are familiar to all. The hazel is the usual pioneer in these encroachments, though sometimes even this is preceded by the wild apple. No one can at this day travel two hours on any of the railroads through our prairies without passing some grove of timber bordered by considerable belts of hazel, among which, not far from the outer edge, young forest trees will appear, and these will be found to be larger and larger as they are farther and farther from the edge of the grass, and are found nearer and nearer the original forest; this, too, where there has been no cultivation. This is the usual though not universal appearance of the surroundings of the groves at the present day. Sometimes, no doubt, large trees will be found, as advance sentinels, standing out quite in the prairie, but how they have been able to maintain their ground there we may not at all times be able to explain. Such instances are rare exceptions. The general rule is,

that the hazel is in the advance, and from this we may safely conclude that this shrub can maintain the struggle for life with the prairie grass better than forest trees, while in turn it succumbs to the latter. In the hazel earth the seeds of the trees find an accessible soil, where the young plants are indifferent to or are benefited by the shade. In time they rise above the hazel, and at length grow to sufficient size to constitute a forest, and shade the ground, which destroys the hazel, which was their protecting nurse in infancy. The facts stated, I think, clearly warrant the conclusion drawn.

In the paper under consideration, the author, in answer to some well considered remarks of Professor Winchell, says: "The second assertion, that *trees will grow on the prairies when introduced* or planted, is certainly true. But we should take care to make a distinction between the results of an artificial process and a natural one. When trees are planted on the prairie the soil is conveniently prepared. The clayey subsoil mixed with the black mold forms a compound which combines density of certain parts with lightness of others, and contains a great proportion of nutritive elements. If the clay of the subsoil is not too thick to be impermeable to water, and thus to retain it around the roots, this prepared or artificial ground is very appropriate to the growth of trees. But has ever anybody seen oaks or hickories, or any other kinds of trees, grow in the prairies from a bushel of acorns or of nuts thrown upon their surface? Why, then, if trees will grow on the prairies, do we not see those isolated and far-between clusters of trees which appear here and there on the borders of ancient lakes cover a wider area and by and by invade the whole prairies? Some of those trees have lived there for ages, their trunks are strong and thick, and their branches, widely expanded, are shaken and their fruits swept away by the impetuosity of the autumnal storms; and, nevertheless, their domain is restricted by the nature of the ground to limits which they have never surpassed."

Now, the observations already stated in support of which

thousands of witnesses may be found who have dwelt upon the prairies for many years, and have been in the constant habit of observing the various phenomena which they present, fully answer the suggestions contained in the extract which I have made. Arboreous seeds when thrown upon the unbroken prairie do germinate and grow to trees, but with difficulty, no doubt, on account of the sward on which they fall, and the great danger to which they are exposed, especially from fires. Where they have no protection from these their destruction is almost certain, no matter how readily the seed may germinate or how vigorously the young plants may grow. It does not require the cultivation of the soil, the mixing of the clayey subsoil with the black mold of the surface, to insure the successful growth of trees upon the prairies. Indeed, I have already shown that not all the prairies have a clayey subsoil, and, as is elsewhere shown in the paper under consideration, in but few instances does the clay approach the surface to within the reach of the plow. The whole theory under consideration is based on the fatal error that the prairie soils are not adapted to the growth of trees. I do not speak from mere conjecture, but from carefully observed and well attested facts, when I say that the exact reverse is the case.

We have, then, obvious reasons why the scattered clusters of trees referred to, the isolated groves upon the prairies, have not extended their domain so as to embrace the whole field. The prairie fires, the matted, tough sward, the grazing of wild animals in the neighborhood of the groves to which they resorted, the aboriginal encampments usually located around the borders of the groves, would seem to present a sufficient explanation why the groves have not extended, independently of the quality of the soil. That the cultivation of the prairie soils improves their condition for the growth of trees is proved by the more vigorous growth of those where the ground is cultivated than of those which spring from seeds accidentally scattered on the

prairie along the borders of the groves; but this is true of herbaceous vegetation as well.

Who that is intimately acquainted with and has carefully studied the prairies will dispute that the soil of the groves has been formed by the same process that has formed the soil of the treeless prairies? The theory that these groves mark out the places where the agitated waters have thrown up embankments, which cut off the shallow waters where the naked prairies have been formed, is not sustained by either the topography or the geography of the ground. If this theory were true, we should find the groves in continuous lines, upon elevated ridges, composed of sand and gravel, such as we uniformly find to compose those dikes which undoubtedly have been formed as supposed, and have performed the office assigned them. Such, however, is not the case. In very few instances do we find the groves occupying continuous, unbroken ridges of any considerable extent. We find them scattered over the prairies, without law or order, excepting only the condition of water in some form in their vicinity, which may serve to protect them from the conflagrations of the prairies. This water need not charge the soil itself with humidity in order to secure the growth of trees, for it is not uncommon to find the groves occupying the highest and dryest knolls, but at their feet, or at least so near as to serve as a protection, water is sure to be found. In former times, when the traveler, in crossing the great, wild prairies, saw a grove in the distance, he shaped his course to it, with the absolute certainty of finding water there, no matter how dry or parched the prairie might be.

The soil, too, gives no evidence of an accumulation of material, such as is usually thrown up by agitated waters. When we penetrate the soil of the woodlands, even to great depths, as in digging wells and the like, we find the same formations which are met with in the surrounding prairies. I have already alluded to the fact that whenever we find a chain of groves occupying the high divides of the water-

sheds of the prairies, they are generally separated by deep depressions, which would have destroyed them as dikes for the separation of the waters.

As I have already stated, I am prepared to admit, as almost a demonstrated fact, that not only our great prairies, but also our great forest lands and the desert plains, filling all the space between the Alleghanies and the Rocky Mountains, were originally formed or deposited under water, from which they have emerged by some process of nature, probably very slow in its development; but this elevation has not been dependent, to any considerable degree, upon additional deposits, but upon the actual upheaval of the mass of matter originally submerged, or upon the subsidence of the waters by the removal of barriers which once restrained them. And yet, if all prairies have been formed as supposed in the theory which I have taken the liberty of criticising, they have been formed by deposits in the water till, by successive accumulations, they have finally emerged above the waters. To me the evidence that this is not so is absolutely conclusive, as well as that the deposits have been very insignificant, since they were deeply buried under the waters. I will state some of the facts, within the observation of all men, which have led me to this conclusion.

I think it is universally accepted, at least among scientific men, that the rocks (called bowlders) scattered over most of our prairies, at least east of the Missouri River and north of latitude forty, have been transported from their original beds in the north to their present places by means of floating ice. It is an admitted fact that this is not their native place, and hence they must have been transported by some agency; nor are we able to conceive of any other capable of producing such results, many of the masses, especially in the Iowa prairies, weighing hundreds of tons each; it is, moreover, a fact that their rounded form has been acquired by abrasion, by which their sharp angles have been worn away since they were detached from their original beds. We can

conceive of no adequate agency to produce this result but moving water and ice, and aside from all this the most convincing evidence exists, within two miles of where I now write, that these bowlders were brought by icebergs. To the north, but more especially to the west, of the city of Ottawa, and almost within its limits, it is easy to trace the exact size and form of the masses of ice, where they grounded and deposited their freight of bowlders. There one may walk over a quarter of an acre, a half an acre, or several acres, according to the size of the mass, always stepping on these stones, thus deposited close together as they were when embraced in the congealed waters, and outside of the borders not a single stone can be found till another similar collection is met with. The borders of these collections are as sharply defined as if marked with a wall. Here, too, another interesting fact may be observed, which shows that they were not transported in one voyage from their original homes to their present resting place. We observe a single collection composed of a great variety of rocks, — several kinds of granite, trap gneiss, sienite, and perhaps a dozen others, — which we know, from their far distant beds, had been drifted or rolled together from long distances, and worn to their present form, before they were picked up for their last voyage.

The rock-bound shores of Lake Superior show us how these bowlders were formed. There, in many places, we may see before us the lately detached blocks of rock, with all their angles sharp, and, as we pass down from the top of the cliff over the broken masses to the very edge of the water, and even look beneath it, we find the angles of the blocks more and more worn, and the masses themselves smaller, till at last, when we reach the water and look into it, we see before us the smooth, rounded bowlders, as we see them on our prairies; and if we stand there when a heavy sea is rolling in, we see the great blocks of stone jostled together and the process of abrasion going on before our eyes.

It may take a thousand great storms to wear away an ounce from a single block, yet enough millions of such storms will at last do the work, and that effectually. Perhaps the most accessible point where this manufacturing of bowlders can be witnessed is on the mainland west of Partridge Island, a few miles above Marquette. I cannot forbear to mention one other interesting evidence of the transportation of these prairie bowlders. A few miles south of Waterloo, in Black Hawk County, Iowa, is the fragment of an immense bowlder, which must weigh many hundred tons, showing on one side a distinct face of a comparatively recent fracture, and I was credibly informed that many miles distant a similar fragment existed, with a face the counterpart of this, showing that at one time both had constituted one mass.

Now, assuming that our prairie bowlders were transported by icebergs to their present places, and that we are, in some cases at least, enabled to determine the minimum sizes of the bergs which brought them, we are forced to the conclusion that the prairies were covered by deep waters at the time of their transportation. We may safely assume that these ancient bergs resembled those now seen floating from the frigid zones into lower latitudes, where they often ground and are melted away, depositing whatever heavy material they have brought with them from their starting point, which we are told by Arctic navigators is always at or near the shore. If this be so, we know that they must have required a great depth of water to float them. Bergs are now frequently met with projecting hundreds of feet above the water; and, as they float with at least five sixths of the mass under the water, we may form an approximate idea of the depth of the water here when these bowlders were deposited. At least, we may assume that it was very considerable. Had there been any considerable deposit after these bowlders were dropped where we now see them, while they were being elevated above the waters, they must have been deeply buried beneath this deposit, and we should not have this clear evi-

dence, at least, of the former submergence and of the very insignificant deposition during the process of elevation from beneath the waters.

I claim no originality in these suggestions. I have only stated what I believe to be the accepted theory by the most observing and reflecting men in accounting for the presence of the prairie bowlders; but what I claim is, that the patent facts stated are inconsistent with the theory that the great body of our prairies have been built up by accumulations and deposits in shallow water till they were raised above it, and then finally till they have attained their present altitudes. I say the bowlders alone absolutely forbid this, unless they, too, were deposited in very shallow water, or in most cases long after the emergence. But few facts have ever been established by circumstantial evidence more conclusively than this.

But even admitting the shallow pond theory as fully established, and clearly showing how all the soil of the prairies has been formed, still it by no means affords as satisfactory a solution of the problem presented by the absence of trees upon the prairies as I have attempted to show in a previous portion of this paper. Indeed, we venture upon very much whenever we assume to explain all the laws by which Nature works out her great results, or to state all the causes which may have tended to produce this one result. One cause or set of causes, if I may use the expression, may have produced it in one place, and another may have produced it in another place. While we may have clear proofs of the existence and operation of some of these causes, we may not deny that others, and many of them, have been operating for ages on ages, since the prairies became dry land, to promote the growth of one kind of vegetation which by other causes has been destroyed and replaced by another, and, for aught we know, this process may have been many times repeated. In contemplating these works of nature we are too apt to confine our reflections to yesterday. When we pause and let the mind run back through the vista of

time till it becomes bewildered and lost in the contemplation of distance without end, we are then prepared, upon returning to complete consciousness, to appreciate that the growth of the oldest tree of the forest considered in relation to past time has been as rapid as is that shown by the eastern magician, who plants the seeds of the orange before your eyes, and while you yet look the tender plant springs from the ground and grows up to a full sized tree, bears blossoms which fade and fall, and the green fruit appears in their places, which immediately grows to its full size, matures and ripens, and you are invited to pluck and eat, and you find in your hands a veritable orange, rich, juicy, and nourishing. I say this is but the history of our oldest forest trees, when contemplated with reference to the ages that must have elapsed since this land emerged from the bosom of the waters. During all these rolling years surely there has been time enough for the prairies to have been clothed with forests and again denuded of their trees, and for the process to have been many times repeated by agencies not beyond our comprehension or nature's laws. But because this may have been, I have no warrant for saying that it has been, for I lack tangible proof of the fact. I may even assert its probability, or my belief that it has been so, but at last it is but conjecture. Still we cannot shut our eyes to the fact that the study of the geology of this country, in some of its departments at least, is yet in its earliest infancy. May we not reasonably hope that its maturity will develop facts which will dispel the obscurity that now veils many subjects of most interesting inquiry, and enable us to read the past in a clear and convincing light? For instance, the prairies abound in beds of peat, of greater or less extent, some of vast proportions. As yet these are comparatively sealed volumes of history, which, when they shall be opened and read, as they have been in what we call the older countries of the world, will reveal the record of by-gone ages. What treasures of truths have been revealed by the examinations

of the peat beds of Denmark, by Professor Lesquereux, to which reference may be made as quite appropriate to the present inquiry! These are of depths varying only from ten to thirty feet, formed like ours, in basins in the drift. They tell us, as plainly as if written in a book, of the different successive forests which there have lived and flourished, and finally disappeared, and been succeeded by others. The oldest which they reveal is the Scotch fir (*pinus sylvestris*), which is not now found in Denmark, and cannot even be domesticated there. Then succeed several varieties of the oak, one after the other, and so on, until finally at the last the beech is found, which is still the common forest tree of Denmark, and so it was two thousand years ago, as we learn from written history. How admirably do we here find united into a long chain of history by the learned professor, the various links which he found deposited in these beds of peat, the last of which, being united with and interpreted by written history, enable us to read all the rest, with almost as much confidence as if the written history extended back to the time when the first layer of peat was deposited. How shall we restrain our impatience till the seal shall be broken to similar volumes of history, which lie profusely scattered all over our prairie land, waiting to be opened and read by the discriminating geologist? There we may reasonably hope to find facts which will throw a flood of light on the subject of our present inquiry. There alone may we hope to learn, with a reasonable degree of certainty, what kinds of vegetation have grown on these great plains in the long gone ages of the far distant past.

But the supposition of igneous agency in producing the effect under consideration is not a mere speculation or conjecture. It is an established fact, proved by such evidence as leaves no room for controversy, so that whatever else may also have contributed to the same result, fire at least has done its share. Almost every year, in some parts of the country, whole forests are consumed by fire. In a majority of in-

stances, no doubt, a new growth of trees takes the place of the old, but such is not always the case. Mr. Daniel Ebersol, of this city, who is a good observer, and of undoubted veracity, informs me that many years ago, on the Vermillion River, a fire occurred, under his own observation, which utterly destroyed, root and branch, an entire hard-wood forest, and that the entire burnt district was directly taken possession of by the herbaceous plants peculiar to the prairies, so that in a very few years it could not be distinguished from the adjoining prairie, except by its greater luxuriance. The testimony of Mr. J. E. Shaw, who has resided upon the prairies of Illinois for more than fifty, and upon his farm, within two miles of Ottawa, for more than forty years, is equally to the point. He assures me that he has known many forest districts entirely burned over, and every living thing upon them destroyed. Generally they were replaced with trees similar to the former growth; but sometimes the prairie herbage takes and maintains possession. He cites an instance on his own farm, where, forty years ago, when he took possession, there was a forest of large trees, which was destroyed by a fire, when a part of the burned district was again covered with trees, and a part was taken possession of by the prairie grass, and in a comparatively short time could not be distinguished from the adjoining prairie. He mentions another occurrence of the same kind within his own observation, in Putnam County. All who know Mr. Shaw, as I have for a third of a century, will place implicit confidence in the truth of his statements and the accuracy of his observations. Indeed, the character of the latter is such as scarcely to admit of mistake. But corroborating testimony is abundant. I have conversed with many old settlers in different parts of the prairie regions, who mention similar occurrences. I venture the assertion, that a thousand witnesses may be found still living who can state particular instances of the same kind. In my early wanderings over the wild prairies it several times occurred, when approaching a

body of timber, that I met in the prairie grass charred remains of forest trees, perhaps half a mile or more from the edge of the wood, and I have in no instance inquired of one who had similar facilities for observation who did not remember having observed the same thing.

In a former part of this paper I have shown, by evidence which may be seen and comprehended at this day by every observer, how prairies have been and are still being converted into forests. I have now stated, with considerable particularity, evidence satisfactorily showing how forests have been converted into prairies. This seems to me of the very essence of the inquiry, which can alone be solved by evidence of authenticated facts, one ounce of which should be entitled to more weight than a pound of ingenious conjecture.

How vain, then, are the most plausible theories and fine-spun speculations, when we have this palpable, tangible proof of the actual process by which the result has been produced, and that by a simple cause adequate to the result. If the thousand witnesses who have observed this process going on before their very eyes had been in the habit of writing and publishing their observations for the last half century, the question would have been long since so conclusively settled, both among the learned and the unlearned, that all men would be surprised that it was ever a subject of dispute. The great danger to truth would have been that too much effect would have been attributed to igneous agency. For myself, while I am prepared to believe that this has been the most potent of all the causes contributing to the result, I am also prepared to admit that there have been many minor auxiliary causes aiding the principal one, which may have escaped the attention of observers. Least of all of these are the facts which may be considered established as such, and which tend to support what may be termed the shallow pond theory. Those which are invoked in support of what may be termed the arid theory may have

had a considerable influence in aid of the prairie fires on the fertile prairie, and even the most controlling cause on the desert plains, where both herbs and trees are nearly wanting for the lack of moisture to sustain them, even if once there planted. Where there is not sufficient rain-fall to sustain trees when planted, we may reasonably assume that that is the cause of their absence; but I am slow to believe that this, or the peculiar constituents of the soil, are the principal cause why trees grow and flourish vigorously when once introduced. The same cause which keeps them away should kill them when present, if still operating. If there is less annual rain-fall in prairie than in timber districts, we may appreciate that fires, from that cause, may have been more frequent and more destructive, while our daily observation proves that the limited quantity of rain does not render the soil or the atmosphere unadapted to the growth of trees, at least on the prairies east of the Missouri River.

In grouping together some of the facts in support of what may be denominated the igneous theory, I but state a theory which is as old as the first white settlements upon the prairies; but because it has been universally accepted by those who have had the greatest opportunities for observing the facts bearing upon the question, although they make no pretensions to scientific attainments, — for that reason I do not feel called upon to reject it, and with it a great volume of facts which seem conclusively to establish it. At least, till some one else shall produce other tangible facts, as well supported by proof as these, in support of some other theory, and tending to prove the fallacy of the conclusions deduced from these, I must believe that the popular opinion of the country is in the main correct.

Perhaps I have too little respect for mere theories, and too much reverence for facts. I cannot be content with general observations of facts without descending to their minute details, which in my view become of immense importance as qualifying or explaining more general observa-

tion. If, without the careful study of well established facts, mere theories may be draped in the glitter of learned speculations, they can never satisfy that wholesome craving for exact knowledge, which alone forms a sure basis for definite conclusions. Science has sometimes suffered grievous wrong from some of her votaries, who have felt called upon to explain everything, whether explicable or not, by ascertained facts; and, indeed, the more occult the explanation, the more profound would their learning appear. If it so happen that manifest facts are opposed to their theories, why — so much the worse for the facts!

X.

THE LAST OF THE ILLINOIS, WITH A SKETCH OF THE POTTAWATOMIES.

A PAPER READ BEFORE THE CHICAGO HISTORICAL SOCIETY, DECEMBER 13, 1870.

Of the ancient civilizations we know but little. The beginnings of the Egyptians, the Etrurians, the Grecians, the Romans, and even the Milesians, are either entirely shrouded in the dark shadows of the far distant past, or are only lit up by the feeble rays afforded by uncertain fables or mythical traditions. Even far beyond these, great peoples lived, whose existence and civilization are testified to by broken monuments and ruined architecture, widely scattered, especially over Arabia and some parts of Africa, while in our own country, and particularly in Yucatan, we see by their works that nations have lived of whom we know absolutely nothing as to whence they came or whither they have gone.

Geologists tell us of older peoples who occupied many portions of our globe, whose times they have divided into different ages, as the stone age, the bronze age, and the iron age, because of the materials which they used in their arts, but of their coming and their going they can tell us nothing, except that they existed one after another and ceased to be. Whence came the mound-builders of our own land, or those who worked the copper mines of Lake Superior, or those whose old inscriptions are found on the great stones of New Mexico? They lived, made their record, and are gone,—all else is as silent and as dark as the tomb that covers them.

Yet, in all these records history is written; dim and shadowy though it be, still it is history, and we seize upon each sentence of it as upon a precious treasure; we ponder it and strain our eyes to find more than it really tells, but the misty veil of antiquity hangs over it, and finally we turn away unsatisfied.

When America was first visited by Europeans, at least by those who recorded what they saw, it was occupied by barbarous tribes, some much more advanced than others, but still all barbarians. Tradition, among the more advanced, pretended to tell how their ancestors had come from more northern climes, till finally they settled in the milder countries of Mexico or Peru, where they attained a sort of semi-civilization far in advance of the wilder nations either to the north or south of them; but whether their ancestors were the mound-builders or the copper-workers, who once lived where we live, and were driven away by fierce northern hordes more athletic than they, or peacefully left the land in search of a climate less rigorous, we can never know, nor can we satisfy ourselves of the degree of credence which we should place in their own traditions as told by their old men to the first Europeans who saw them, and by whom their stories have been handed down to us.

We do know, certainly, that when the Atlantic coast was first visited by white men who have transmitted to us accounts of what they saw, they found there tribes of Indians who subsisted principally by fishing and the chase, although they practiced agriculture to a limited extent, for they supplied the first immigrants to New England with corn from their hidden stores. The early explorers occasionally found the same grain cultivated in the valley of the Mississippi, and Lewis and Clarke procured supplies of it on the Upper Missouri. Still, their agriculture was too limited to have had much influence on the density of population; and without the cultivated products of the soil no country can sustain a large population of men, if we except some tropical

countries where spontaneous fruits are in perpetual season, and even there the aboriginal population is found to be very sparse as compared with countries where agriculture furnishes the principal sustenance to man.

From the changes which had recently taken place among the original inhabitants of this country when they were first discovered, as told by their old men, and also from the changes which occurred after their discovery, but before the exterminating influence of civilization bore upon them, we may safely assume that national and even tribal formations had been quite recent; yet, recent as they no doubt were, we know almost nothing of them. While we know that some nations become totally extinct by reason of aboriginal warfare alone, we cannot point to a single instance of the birth and growth of any native tribe, unless the uniting of the remnants of several broken tribes into one may be so considered.

At last we are forced back to the conclusion that it is only comparatively in modern times and of civilized communities that history, whether written in books or among the rocks, tells us of the origin of nations. To this we can mention one notable exception. By divine interposition, we are told of the beginning and of the progress, and by profane history of the final dispersion, of one of the great ancient nations of the earth. There we are told of its founder, Abraham, of its struggles, of its triumphs and its misfortunes, of its victories and its defeats, of its pure worship and its gross idolatry, and of its final extinction as a nation under the Roman Empire.

Necessarily, the history of the aborigines of this country is confined to the period since their first discovery by educated man, and to the few uncertain traditions told by them of their comparatively very recent times; most of these traditions as handed down to us are purely of a mythological character, and serve to teach the nature of the imagination or mental condition of the native rather than actual facts

that had gone before. Nor do those who have made the study of the native American a specialty seem to have given that study the form of connected history to any large degree; and he that would inform himself of such history must gather it from a thousand different sources, picking up a grain here and a grain there, as he can find it.

More than thirty-seven years ago, when I first became a citizen of Chicago, I found this whole country occupied as the hunting grounds of the Pottawatomie Indians. I soon formed the acquaintance of many of their chiefs, and this acquaintance ripened into a cordial friendship. I found them really intelligent and possessed of much information resulting from their careful observation of natural objects. I traveled with them over the prairies, I hunted and I fished with them, I camped with them in the groves, I drank with them at the native springs, of which they were never at a loss to find one, and I partook of their hospitality around their camp fires.

Wild scenes have always had a charm for me. I have ever been a lover of nature, and the enjoyment of those scenes when prairie and woodland, lake shore and river, were almost everywhere as nature made them, have left behind a pleasing memory which sometimes makes me almost wish that I could live over again my younger days. Since nature's handiwork has been defaced all around us by the hand of civilized man, I love to hie away to distant shores and the far-off mountains, and, with a few friends of tastes similar to my own, enjoy the wild scenery among the rock-bound islands of Puget's Sound, or the still solitude of the high sierras.

Who would have thought, at the time of which I speak, that he who then here enjoyed the charms which nature throws over all her works would ever seek the far-off scenes of the Pacific slopes in which to indulge his favorite reveries? There are some who hear me now who remember the lake beach with its conical sand-hills covered over by

the evergreen juniper, whose fragrance loaded with a rich aroma the soft breeze as it quietly crept in from the rippling waters of the lake. That old lake shore, fashioned as God had made it by his winds and waves for ten thousand years before, had more charms for me than since the defacing hand of man has builded there broad avenues and great marble palaces, which are as far beneath the works of nature's architect as man himself is beneath Him who made all things well. I thought it then a romantic place fit for the meeting of native lovers, in which to say soft words, and I felt assured that it was so regarded by them when once I was called upon to unite in wedlock there a happy pair, whose ambition it was to conform to the white man's mode in that solemn rite, and, as the dusky bride explained, to have it last forever.

As might have been anticipated, neither history nor tradition pretends to go back to the origin of any of the native tribes who occupied this land when first explored by civilized man. At that time, the country where we live was principally occupied by the Illinois Indians, an important people who ranged from the Wabash to the Mississippi, and from the Ohio even to Lake Superior, although there were a great many other tribes occupying the same territory. Their chief location was in Northern Illinois. Here was their home, and their great metropolis was where Utica now stands, in La Salle County. There then stood the largest city ever built by northern natives. It was a delightful place in the bosom of a beautiful valley, and the city occupied all the intervening space between the river and the bluff, nearly a mile in extent. Their great cemeteries there testify to the populousness of the place, even were the testimony of the first discoverers wanting.

If we do not know of the beginning of any native nation, we are credibly told of the extinction of this great people, and that too within a century after they were found so populous and so prosperous by the enterprising explorers. Soon

after their discovery by La Salle, the great Iroquois confederation, whose battle-fields were strewn with their victims almost from the Atlantic coast to the Wabash, and from the great lakes, and even north of them, to the Alleghanies and the Ohio, finally extended their enterprises to the Illinois. With a great slaughter they defeated this hitherto invincible people, laid waste their great city, and scattered them in broken bands over their wide domain. From this terrible blow the Illinois never recovered. For a century later they struggled with waning fortunes against northern encroachments, till finally they were exterminated by the Pottawatomies and the Ottawas, at Starved Rock, the Fort St. Louis of La Salle, which overlooks the site of their great city and the scene of their first great defeat and slaughter by the conquering Iroquois, as I shall presently relate. There still stands this high isolated rock as it has stood for thousands of years, the swift current of the river bathing its feet on one side, its summit overlooking the broad valley and the many wood-clad islands for many miles above and below it, fit monument to the great departed who had, during many long years of peace and security, looked upon its impregnable heights as a sure refuge in case of disaster. Alas! if it was secure against the approach of human hands, gaunt famine could scale its ascents and do its deadly work. There is and ever will be a charm about the place, both from its own romantic surroundings and the melancholy story of the bloody scenes it has looked down upon. While the visitor stands upon its native battlements, silently pondering what has been told him, insensibly his imagination carries him back to ages long ago, and he thinks he hears the wail of woe, oft and oftentimes repeated, and then again the song of revelry and joy sung by those who passed away long before the white man saw it. The ancestors of my ancient friends were responsible for the last sad catastrophe.

The Pottawatomies were a tribe of the great Algonquin confederation, whose power was so severely felt by the Brit-

ish forces when at war with France, in the middle of the last century, though we do not know the story of their individual prowess in that sanguinary warfare. When Fathers Allouez and Doblon first visited Green Bay, and there established a mission, just two hundred years ago, they found the Pottawatomies living on those verdant shores, and this is the first mention I can find of them in history. That was then their settled home, though they roamed far away, for they were in the habit of extending their visits to the shores of Lake Superior. In 1671 they are mentioned by the missionary fathers, as met with at La Point, on that lake, not as residents but as visitors. At that time they were not known south of the lakes, for when Joliet and Marquette returned from their discovery of the Mississippi, by way of the Illinois River, in 1674, they met none of the Pottawatomies here.

In 1675, Marquette, no doubt by invitation of the Illinois Indians, whom he had met the year before on his return with La Salle from the Mississippi, came from Green Bay to establish a mission here. In this journey he was attended by a party of Illinois Indians, and also by a band of the Pottawatomies. So far as we know, these were the first of the tribe who ever saw the country south of Lake Michigan. They coasted the west side of the lake in open boats or canoes, in the latter part of the season, when the lake is boisterous and forbidding. It was a perilous and fatiguing voyage of four months' duration, and sorely tried the endurance of the zealous missionary. They at last reached Chicago, just as winter was closing in, proceeded up the South Branch of the river to where Bridgeport now stands, and there built a hut, in which the missionary wintered. After the lonely and tedious winter was passed, Marquette proceeded down the Illinois River to the great city of the Illinois, below Starved Rock, and there established the first mission ever founded in the Illinois country, naming it Kaskaskia.

How soon after this the Pottawatomies left their old home

on Green Bay, and sought more hospitable regions further south, we are not informed; nor can we tell whether the emigration was gradual, or if they broke up all together, but as we find them in their southern homes in different bands, the probabilities are that they left in parties. A portion settled on the Saginaw Bay, in Michigan, who were subsequently known as the Pottawatomies of Saginaw, or of Huron. Others descended as far as Detroit, and settled in that neighborhood. Others found their way to the St. Joseph River, on the east side of Lake Michigan; and others, it may be presumed, came directly to Northern Illinois, though it is possible they spread from Michigan into Illinois. The precise date of these several migrations we cannot give, but Croghan and Bouquet found them, in the middle of the last century, occupying the country about Detroit and Fort St. Joseph; and we find no account of them within the last hundred years and more at Green Bay. From these explorers we get the first intimation of their numbers, and yet this is of the most unsatisfactory kind. They set them down at three hundred and fifty; and Dodge, a quarter of a century later, places them at four hundred and fifty, while Hutchins places them at a still lower number than the first. Upon these numbers we can place but little reliance; at best they could have been based but on imperfect estimates, including, no doubt, only those bands met at Fort St. Joseph and Detroit, without taking into account those at Saginaw or in Illinois. We may safely assume, also, that these figures are designed only to express the number of their warriors; for Sir William Johnson, who assembled the Algonquin confederation at Niagara in 1763, informs us that of the nineteen hundred and thirty warriors there assembled four hundred and fifty were Pottawatomies, or, according to the old orthography, *Pouteotamies*. With them and their associate warriors General Bradstreet there concluded a treaty which pacified all the Indian tribes bordering the upper lakes, who had hitherto been inveterate en-

emies to the British Government and the English immigrant. A reasonably conciliatory course with them since, and a moderate share of good faith towards them, have enabled the Canadas to live with those who resided on the north shores in amity in times of peace, and to depend upon them as allies in time of war. The number of warriors representing the Pottawatomies at the Algonquin convocation at Niagara shows that the whole tribe must have been largely in excess of the numbers given by Bouquet and others, and their report so nearly approximates to the number of warriors at Niagara, as to convince us at once that they spoke only of their able-bodied men. Nor is it very probable that all the warriors which the several bands of that tribe could furnish made the long journey to Niagara to attend the council. The fact that the Pottawatomies furnished nearly one-fourth of the representatives in that council of the whole Algonquin confederation, should convince us of the commanding importance of this tribe in that powerful association of the Indians; so were they the last, south of the lakes, as we shall see, to yield up their place to the irresistible advance of civilization.

The relations existing between the Pottawatomies and the Ottawas were of the most harmonious character. They lived together almost as one people, and were joint owners of their hunting grounds. Their relations were quite as intimate and friendly as existed among different bands of the same tribe. Nor were the Chippewas scarcely more strangers to the Pottawatomies and the Ottawas than the latter were to each other. They too claimed an interest in the lands occupied, to a certain extent by all jointly, so that all three tribes joined in the first treaty for the sale of their lands ever made to the United States. Chicago was ever an important point in the estimation of the Pottawatomies and their associates, and here was the council held which resulted in that first treaty in 1821, when the three tribes named ceded to the United States five millions of acres in Michigan.

Since their emigration from the north, a sort of distinction had grown up among the different bands of the Pottawatomies, arising from their several locations, which seem to have stamped upon their tenants distinct characteristics. Those occupying the forest lands of Michigan and Indiana were called by themselves and by the traders the Indians of the Woods, while those who roamed these great grassy plains were called the Prairie Indians. The former were much more susceptible to the influence of civilization than the latter. They devoted themselves, in a very appreciable degree, to agriculture, and made the tillage of the soil to supplement the fruits of the chase. They welcomed the missionary among them with a warm cordiality. They listened to his teachings, and meekly submitted to his admonitions. They learned by heart the story of our crucified Redeemer, and with trembling voices recounted to each other the sufferings of the cross. They bent the knee and bowed the head reverently in prayer, and raised their melodious voices in sacred songs taught them by the holy fathers. They received the sprinklings with holy water, and partook of the consecrated elements, believing devoutly in their saving grace. They went to the confessional with downcast looks, and with deep contrition told the story of their sins, and with a radiant joy received the absolution, which, in their estimation, blotted out their sins forever. Here, indeed, was a bright field of promise to those devoted missionaries, who deeply felt that to save one heathen soul from the awful doom which they believed awaited all those who died without the bosom of the church was a rich reward for a whole life of pinching privation and of severe suffering; and their great ambition was to gather as many redeemed souls as possible to their account, each of which should appear as a bright jewel in the crown which awaited them in the future state.

It was very different, however, with the Prairie Indians. They despised the cultivation of the soil as too mean even

for their women and children, and deemed the captures of the chase the only fit food for a valorous people. The corn which grew like grass from the earth which they trod beneath their feet was not proper meat to feed their greatness. Nor did they open their ears to the lessons of love and religion tendered them by those who came among them and sought to do them good. If they tolerated their presence, they did not receive them with the cordiality evinced by their more eastern brethren. If they listened to their sermons in respectful silence, they did not receive with eager gladness the truths they taught. Even if they believed for the moment what they were told, it made no permanent impression on their thoughts and actions. If they understood something of the principles of the Christian religion which were told them, they listened to it as a sort of theory which might be well adapted to the white man's condition, but was not fitted for them, nor they for it. They enjoyed the wild, roving life of the prairie, and, in common with almost all other native Americans, were vain of their prowess and manhood, both in war and in the chase. They did not settle down for a great length of time in a given place, but roamed across the broad prairies, from one grove or belt of timber to another, either in single families or in small bands, packing their few effects, their children, and infirm on their little Indian ponies. They always traveled in Indian file upon well-beaten trails, connecting, by the most direct routes, prominent points and trading posts. These native highways served as guides to our early settlers, who followed them with as much confidence as we now do the roads laid out and worked by civilized man.

Northern Illinois was more particularly the possession of the Pottawatomies, but, as before stated, I have sought in vain for some satisfactory data to fix the time when they first settled here. They undoubtedly came in by degrees, and by degrees established themselves, encroaching at first upon the Illinois tribe, advancing more and more, sometimes

by good-natured tolerance, and sometimes by actual violence. I have the means of approximating the time when they came into exclusive possession here. That occurred upon the total extinction of the Illinois, which must have been some time between 1766 and 1770. Méachelle, the oldest Pottawatomie chief, when I became acquainted with them, thirty-seven years ago, associated his earliest recollection with their occupancy of the country. His recollection extended back to that great event in Indian history, the siege of Starved Rock and the final extinction of the Illinois tribe of Indians, which left his people the sole possessors of the land. He was present at the siege and the final catastrophe, and although a boy at the time, the terrible event made such an impression on his young mind that it ever remained fresh and vivid. I am indebted to Mr. William Hickling for assisting my memory on a point so important.

The death of Pontiac, the great Ottawa chief, occurred in 1766. He was the idol of his own people, and was beloved and obeyed scarcely less by the Pottawatomies. They believed that the Illinois Indians were at least accessory to his murder, and so held them responsible, and consequently the Ottawas and Pottawatomies united all their forces in an attack upon those whose deadly enemies they had now become. I am not satisfied that their previous relations had been those of cordial friendship; and if the peace had not been broken by open war, there was bad blood existing between them which must have arisen between those who were making and those who were suffering encroachments.

The Illinois Indians never fully recovered from the great calamity which they had suffered a century before at the hands of the Iroquois. By that their spirit and their courage seemed broken, and they submitted to encroachments from the north by their more enterprising neighbors, with an ill grace, no doubt, but without protecting their rights by force of arms, as they would have done in former times, when they would have sought to revenge themselves upon

those upon whom they looked as their underhand and treacherous enemies.

In the war thus waged by the allies against the Illinois, the latter suffered disaster after disaster till the sole remnants of that once proud nation, whose name had been mentioned with respect from Lake Superior to the mouth of the Ohio, and from the Mississippi to the Wabash, now found sufficient space upon the half acre of ground which crowns the summit of Starved Rock. As its sides are perpendicular, except on the south where it may be ascended with difficulty by a sort of natural stairway, some of the steps of which are a yard high and but a few inches wide, so that not more than two can ascend abreast, ten men could repel ten thousand with the means of warfare then at their command. The allies made no attempt to take the fort by storm, but closely besieged it on every side. On the north or river side the upper rock overhangs the water somewhat, and tradition tells us how the confederates placed themselves in canoes under the shelving rock and cut the thongs of the besieged when they lowered their vessels to obtain water from the river, and so reduced them by thirst; but Méachelle, so far as I know, never mentioned this as one of the means resorted to by the confederates to reduce their enemies, nor, from an examination of the ground, do I think this probable; they depended rather upon bringing about a lack of provisions, which we can readily appreciate must soon occur to a savage people, who rarely anticipate the future by storing up supplies. No improvident people could have subsisted long in such a place. How long they did hold out Méachelle did not and probably could not tell us; but at last the time came when the unfortunate remnant could hold out no longer. They awaited but a favorable opportunity to attempt their escape. This was at last afforded by a dark and stormy night, when, under the lead of their few remaining warriors, all stole in profound silence down the steep and narrow declivity, to be met with a solid wall of

their enemies surrounding the point where alone a sortie could be made. The horrid scene that ensued can be better imagined than described. No quarter was asked or given. For a time the howlings of the tempest were drowned by the yells of the combatants and the shrieks of the victims.

Desperation lends strength to even enfeebled arms, but no efforts of valor could resist the overwhelming numbers, impelled by the direst hate. The braves fell one by one, fighting like very fiends, and terribly did they revenge themselves upon their enemies. The few women and children whom famine had left but enfeebled skeletons fell easy victims to the war-clubs of the terrible savages, who deemed it as much a duty and almost as great a glory to slaughter the emaciated women and the helpless children as to strike down the men who were able to make resistance with arms in their hands. They were bent upon the utter extermination of their hated enemies, and most successfully did they bend their savage energies to the bloody task.

Soon the victims were stretched upon the sloping ground south and west of the impregnable rock, their bodies lying stark upon the sand which had been thrown up by the prairie winds. The wails of the feeble and the strong had ceased to fret the night winds, whose mournful sighs through the neighboring pines sounded like a requiem. Here was enacted the fitting finale to that work of death which had been commenced, scarcely a mile away, a century before by the still more savage and terrible Iroquois.

Still, all were not destroyed. Eleven of the most athletic warriors, in the darkness and in the confusion of the fight, broke through the besieging lines. They had marked well from their high perch on the isolated rock the little nook below where their enemies had moored at least a part of their canoes, and to these they rushed with headlong speed, unnoticed by their foes. Into these they threw themselves, and hurried down the rapids below. They had been trained to the use of the paddle and the canoe, and knew well every

intricacy of the channel, so that they could safely thread it even in the dark and boisterous night. They knew their deadly enemies would soon be in their wake, and that there was no safe refuge for them short of St. Louis. They had no provisions to sustain their waning strength, and yet it was certain death to stop by the way. Their only hope was in pressing forward by night and by day, without a moment's pause, scarcely looking back, yet ever fearing that their pursuers would make their appearance around the point they had last left behind. It was truly a race for life. If they could reach St. Louis, they were safe; if overtaken, there was no hope. We must leave to the imagination the details of a race where the stake was so momentous to the contestants. As life is sweeter even than revenge, we may safely assume that the pursued were impelled to even greater exertions than the pursuers. Those who ran for life won the race. They reached St. Louis before their enemies came in sight, and told their appalling tale to the commandant of the fort, from whom they received assurances of protection, and were generously supplied with food, which their famished condition so much required. This had barely been done when their enemies arrived, and fiercely demanded their victims, that no drop of blood of their hated enemies might longer circulate in human veins. This was refused, when they retired with impotent threats of future vengeance, which they never had the means of executing.

After their enemies had gone, the Illinois, who never after even claimed that name, thanked their entertainers, and, full of sorrow, which no words can express, slowly paddled their way across the river, to seek new friends among the tribes who then occupied the southern part of this State, and who would listen with sympathy to the sad tale they had to relate. They alone remained, the broken remnant and last representatives of their once great nation. Their name, even, must now be blotted out from among the names of the aboriginal tribes. Henceforth they must cease to be of the

present, and could only be remembered as a part of the past. This is the last we know of the last of the Illinois. They were once a great and prosperous people, as advanced and as humane as any of the aborigines around them; we do not know that a drop of their blood now animates a human being, but their name is perpetuated in this great State, of whose record of the past all of us feel so proud, and of whose future the hopes of us all are so sanguine.

Till the morning light revealed that the canoes were gone, the confederates believed that their sanguinary work had been so thoroughly done that not a living soul remained. So soon as the escape was discovered the pursuit was commenced, but, as we have seen, without success. The pursuers returned disappointed and dejected that their enemies' scalps were not hanging from their belts. But surely blood enough had been spilled — vengeance should have been more than satisfied.

I have failed, no doubt, properly to render Méachelle's account of this sad drama, for I have been obliged to use my own language, without the inspiration awakened in him by the memory of the scene which served as his first baptism in blood. Who can wonder that it made a lasting impression on his youthful mind? Still, he was not fond of relating it, nor would he speak of it except to those who had acquired his confidence and intimacy. It is probably the only account to be had related by an eye-witness, and we may presume that it is the most authentic, and may well deserve preservation, and so may be worthy of a place in the archives of this Society, whose proper mission it is to gather and bring to light whatever still remains to be gleaned from the memories of those who are fast fading away of scenes whose theatre was the land we live in, and of peoples who once occupied this territory. The few dim lights still remaining will soon be put out, and darkness and oblivion must shroud forever all that is then unrecorded.

This great event in Indian history secured to the Potta-

watomies all the territory then belonging to the Illinois, the exclusive right to which was undisputed by other tribes. It extended their possessions to the lands of the Peorias on Peoria Lake. They occupied to the Wabash as far south as Danville, and even beyond. On the other side they occupied to the Rock River, though their right to a strip of land on the east side of that river was disputed by the Sac and Fox Indians who ranged the prairies west of there and beyond the Mississippi. They extended north into Wisconsin as far as Milwaukee, though their northern boundary was never well defined, but their friendly relations with the Chippewas prevented this from ever becoming a source of disagreement between them. After the extermination of the Illinois, their general condition was that of peace, and I have learned of few incidents since worthy of record. As before intimated they had a perpetual difficulty with the Sacs and Foxes about the lands bordering on the east side of Rock River, and when the braves of the contestants met on the disputed territory they fought it out, but I have not learned that the war was often carried beyond the contested grounds, though the eastern boundary of these was quite undefined.

As a tribe the Pottawatomies may not have taken an active part against the United States in the War of 1812, yet it is certain that many of their young chiefs and braves did so. On this subject they were extremely reticent. At one time, when riding over the prairie south of Blue Island, in 1833, with Billy Caldwell, when the old chief as usual was answering my questions about the past and what portion of the country he had visited, he commenced, as it seemed inadvertently, to give an account of an expedition of the British from Canada across to Ohio, of which he and a number of his warriors formed a part; but he had hardly got them landed on our shores when he seemed to remember that I was an American, and that it was better not to enlighten me further on the subject, and he broke off suddenly, nor could I by any means prevail upon him to return to the subject.

During the Black Hawk War, as it was called, in 1832, they remained, as a people, loyal to the United States, but it was with great difficulty that many of the young men were kept from participating in the affray with the Sacs and Foxes. The part they acted in that affair may be found in the written history of the times.

Chicago was ever a favorite resort of the Pottawatomies. Here they chose to hold their great councils, and here they concluded the last treaty with our government as they had the first, as I have already stated, twelve years before. This last treaty was held in 1833, and I was a daily attendant upon the deliberations of the council. By this time the Ottawas and the Pottawatomies had become so blended and intermixed that they had become practically one people, and were generally designated by the latter name. I do not remember the number of Indians in town at the time of the treaty, but the assemblage was by no means confined to the chiefs who participated in the deliberations. There were certainly several thousand natives here, who were supplied with regular rations of beef and flour by the government, and it was manifest that they were quite willing to protract the conference so long as these should last. At the close of each important deliberation, especially if much progress seemed to have been made, a keg of twisted plug tobacco was rolled into the council house, the staves cut in the middle with an ax, and the chiefs told to help themselves. This was accompanied with a box of white clay pipes. They helped themselves with great decorum, and even some ceremony. By this last treaty, concluded at Chicago in 1833, the Indians disposed of all their remaining lands to the United States, except some specific reservations for some of their chiefs, and agreed to remove to a limited location assigned them west of the Missouri River. When the treaty was finally concluded, the presents all distributed, and no more rations served out, they gradually dispersed till only those who resided in and about Chicago remained. For two

years longer this people continued among us, subsisting as they had done before, nothing worthy of note, so far as I know, occurring in the mean time.

In 1835, and for the last time, the whole assembled at Chicago, to receive their annuity from the government, and to make their final start for their new home. I was absent at the time of their assemblage, and have no means of stating at what date they began to make their appearance in the town, for now Chicago had really begun to present an appearance which would justify the name. Here, for the first time, many who had through their whole lives been in the habit of visiting this favorite location when the rank grass grew waist high where the Tremont and the Sherman houses now stand, must have been deeply impressed with marks of civilization vastly more extensive than any they had ever seen before, or been able to comprehend. It assured them, and they comprehended it, that they were already strangers in their native land; that a mightier race had come, before which they must fade away. It is emphatically true of all our American Indians, that they cannot exist, multiply, and prosper in the light of civilization. Here their physical vigor fails, their reproductive powers diminish, their spirit and their very vitality dwindle, and no philanthropy, no kindness, no fostering care of government, of societies, or of individuals, can save them from an inevitable doom. They are plainly the sick man of America; with careful nursing and the kindest care, we may prolong his stay among us for a few years, but he is sick of a disease which can never be cured except by isolating him from civilization, and remanding him to nature's wildness, which, in truth, has more charms in many cases for even the white man than the refinements and the restraints of the white man's mode of life. Our tastes for these are the results of artificial training, and our tendency is constantly to relapse to a wilder life in the woods and in the mountains. The bivouac of the soldier has a charm to which he often recurs with

animated pleasure. The camp-fire of the hunter has a fascination which he who has enjoyed it can never forget. And in our earliest childhood we show our natural tastes and inclinations by listening to stories of these with more avidity than any other. Mayne Reid built his hopes on this juvenile taste, which he knew was stronger than any other, when he wrote his charming stories which have made his name so popular, yes, and so dear, too, to the rising generation. Accounts of huntings and fishings, of living in the woods and in the plains, or in some sweet little nook at the foot of the mountain, down which the babbling brook comes from the melted snows far above, and where Nature in her unbroken beauty and her sublimity reigns around in supreme silence, and there is no mark, no sound of civilization near, — these have fascinations for even the white race which are entirely wanting in the most glowing accounts of cathedrals and palaces and pictures, descriptions of which fail to interest those whose tastes have not been cultivated to a full appreciation of art. If a love of Nature in her wildest moods and scenes be a relic of barbaric taste which civilization has failed to eradicate, then, to that extent at least, I am a savage still.

This tendency in the white race to revert to what we may term the natural tastes, is strongly manifested whenever, we see one taken in infancy and brought up among savages. Almost always he is the greatest savage of them all, notwithstanding the hereditary influence, through many generations, of those cultivated tastes and habits which distinguish the civilized man from the savage. This observation may not be confined to the case cited, although that is perhaps the most convincing proof of the tendency to revert to the savage state. We often see instances where men have grown to maturity in the midst of civilized society, who unite themselves with the native tribes, enjoying that life better than the former, and choosing to spend their days with their new found friends, although it involves a sacrifice of all

those ties which so strongly bind us to friends and kindred and early associations. In such cases we rarely find them practicing those arts which they had early learned, or those habits of industry which characterize civilized man. It is undoubtedly true, in these latter cases, that he who becomes a savage after puberty has an exceptional inclination to revert to the wild state; still the number is so considerable as to show us that civilization has not been so long continued as wholly to change our natures, and that it is almost, if not entirely, artificial.

I think the facts will warrant the conclusion that this tendency to reversion is much stronger in the male than the female. In the few instances where the white female has been reared in savage life, and has then been reclaimed, she has more readily conformed to civilized habits, and has shown less longing for the wild scenes among which she was reared; and when she has been introduced to savage life after maturity she seems always happy to escape it. In observing this fact, however, we ought not to forget that the harder lot of the female among savage peoples may tend to make her more willing to escape what is really a state of bondage and servitude. Reverse the state of things, and how rarely do we find the savage ever civilized. In the numerous instances where the savage infant has been removed from the influences and allurements of his ancestors, and reared entirely among us, and taught all that civilization and Christianity could teach him, but very few have been wholly weaned from the tastes and inclinations which they have inherited from their savage ancestors. Some notable and brilliant exceptions are no doubt to be met with, but they are so rare as to inspire rather our remark and admiration than a well-grounded hope that we can ever succeed in reclaiming them as a people.

The native American is in some respects a proud and a sensitive being, and is not wanting in reflective powers. When brought in contact with civilization, he recognizes his inferi-

ority, and appreciates his inability ever to overcome it. He feels that he cannot live with the stranger, except as an inferior, and, inspired by his native pride, he would rather cease to exist than to do this. He appreciates his inevitable doom. He ceases to hope, and then comes despair, which contributes more than all else to hasten the result which he foresees. While all have seen from the beginning that the aborigines melt away and die out before the advance of civilization, in spite of the most humane efforts to produce a different result, we may not have appreciated all the causes which have contributed to this end. Those which have been the most readily understood, because the most patent, are the vices and diseases and poisonous drinks which the white race has introduced among them from the very first. If these were the only causes we might deem it possible, by municipal regulations, to remove them. While this would be a great boon which civilization undoubtedly owes to the original owners of the soil upon which we are so rapidly expanding into a great nation, I am satisfied it would not secure the great end which philanthropy must most ardently desire. They still would not amalgamate with civilization, nor become civilized as a separate people. They can only live and prosper and multiply by continuing as their ancestors have lived, in a wild state, roaming over large areas sparsely populated, depending upon what they can secure of nature's raising, and when their numbers become too great for subsistence upon such supplies, they must become reduced by wars, disease, or famine.

The views I have suggested, of the effect upon the mind and the sensibilities of the Indian, which is produced by his observations of advancing civilization as it intrudes upon him, and its reflected influence upon his physical organization, I think well illustrated and confirmed by the observations of Mr. Sproat in his "Scenes and Studies of Savage Life." He employed a large number of natives about his saw-mills at Barclay Sound, on Vancouver's Island. Here

the natives were settled around him in comfortable dwellings with their families, and worked promiscuously with the white laborers. The strictest temperance was enforced throughout the settlement, and no violence was permitted toward the natives, but they were treated with the utmost kindness and fairness. They were well fed, well clothed, and carefully taught. Here they were surrounded with all the best influences of civilization, and as few of the vices as we may expect to find, when the red man is brought in contact with the white.

For a time all seemed to go on well, and the experiment promised a success. At length, however, a change became observable, especially among the Indians who lived nearest the white settlements. A few of the sharpest of the young natives had become offensively European, as he calls it, but the mass of the Indians had ceased to visit the settlement in their free, easy, and independent way, but lived listlessly in their villages, brooding seemingly over heavy thoughts. They seemed to have acquired a distrust, nay, almost a contempt of themselves. At first they had looked upon mills and machinery, upon steamships, and upon great houses, indeed, upon all the wonderful works of the new-comer, with curiosity and interest, but now, with distrust, with disgust, and even with despair; the effect of this despair was now manifest. They even began to abandon their old tribal habits, practices, and ceremonies. Presently, without any apparent cause, an unusual amount of sickness was observed among them, and the death-rate was largely increased, and so continued during the five years that our author remained among them. Nobody molested them. Notwithstanding all their comforts and all the care bestowed upon them, they sank into a gradual but sure decay. The light of civilization instead of warming them into new life seemed to bring a blight upon them; they felt that they were an inferior race. They lacked the energy, and therefore the ability, to become and live as civilized men; their proud hearts were

crushed at the thought of living with the white race as inferiors and therefore a degraded race; and then necessarily followed disgust and despair, and then came disease and death. Had they lacked that lofty pride and that love of independence which are so marked a characteristic of our Indians, they might have enjoyed the comforts which civilization brought them, without mortification at the consciousness of living as inferiors among a superior race. But no kindness, no assistance, no proffered recognition of equality, could hide from their view that they were and must be inferiors.

In several cases, advanced aboriginal Indian tribes have by act of Congress been declared citizens and endowed with all the rights and privileges of citizenship. Still they were conscious of their inability properly to exercise and enjoy those rights and privileges. They knew they could not exercise the franchise side by side with the white man with the same degree of intelligence and judgment, and so they scorned to use it. Perhaps it would have been better for them could they have ignored the real distinction which existed between them and the white race, and persuaded themselves, or been persuaded by others, that they were the equals of any. They had too much shrewdness to be thus blinded, and so they recognized a truth which another disposition would have concealed from them, and submitted to what seemed to be a fate in a sort of reckless, sullen silence, at least till a possible opportunity should occur for striking a blow, though it might be an expiring one, for what they believed existence; and if not for existence then for revenge, if not for the future then for the past.

Laying aside what all must recognize as palpable evils introduced among them, as fraud, whiskey, and demoralization, there is, upon a deeper look beneath the surface, a fatal difficulty which all the kindness and service rendered them by civilization, philanthropy, and Christianity cannot overcome. The proud and haughty chieftain clearly sees in

the coming of the stranger and in his proffered kindness the unavoidable degradation of his people from that lofty estate of proud independence which his forefathers maintained; and at last, after being driven from their envied inheritance, and finding no place of rest but in the grave itself, their final extinction from the face of the earth. It is a sad picture, and yet it stands out before us in the light of the past as if painted on the wall before us by the Divine finger. We may not deny that the sacrifice is necessary to promote the greatest good to the greatest number; but surely we may breathe a sigh of sympathy for the victim whose immolation is necessary to carry out even a Divine plan. And so may we have some compassion for him if in his death-throes he manifests his savage and untamable nature. If it was his misfortune to be born a savage, with no rights which the white man is bound to respect, then it was his misfortune, also, to be born with a nature which renders him incapable of civilization, a lofty desire for independence, a profound detestation for everything like servitude, a deep-seated sentiment of revenge, and, above all, a total inability to appreciate how it is that he has no rights which he may call his own, and even a superior race should regard.

We must admit that our boasted civilization has its strange phases, and sometimes its manifest inconsistencies. We always repeat with a frown the maxim that "Might makes right," and yet we act upon it whenever the public weal is supposed to require it. Perhaps the truest and the best justification which we can plead for insisting upon taking the lands of the aborigines whenever we wish them, using no more force than is necessary to accomplish what we deem necessary, — whether the owner is willing to sell them or not, — is that a few useless savages, who can do no good for the world at large, and little good even for themselves, must not stand in the way of the march of civilization; that God made the earth and all that is upon it for his own honor and glory, and that both they and we are but tenants

at his will; and that it is his undoubted right, whenever in his good pleasure He sees fit, to eject those who in his estimation do Him no honor, and replace them by those who may contribute more to his glory, and that thus He is working out his great scheme conceived from the beginning of all time. I say, if we can but thus console ourselves that in what, to the superficial observer seems to be spoliations of the weak by the strong, we are but instruments in the hands of the Almighty to work out his great purposes and to execute his solemn decrees, then, indeed, we may feel that we have washed our hands in innocency. For myself, I have never been a very ardent believer in what are sometimes called special missions, and merely suggest this as the most plausible justification which I have ever been able to contrive. Still, I do believe that my old friends did not see it exactly in that light when they turned their backs upon Chicago, the scene of so many of their grave councils and of their happy gatherings; when they looked for the last time upon the ever bright waters of the lake, and bent their slow and reluctant steps to a land of which they knew not, and in which they would be strangers; yet there were old men among them who could have told them that their fathers had with bloodier hands expelled another nation who had occupied the land before them, and that no doubt the title had been thus transferred many times, the conveyance always sealed by the blood of the last owner.

At this last gathering of the tribe at Chicago the total number of souls was about five thousand. While here they were well fed by the government; and when they went they were removed by the government under the charge of the late Captain Russell. By him they were transported to their new home on a reservation assigned them in Clay County, Missouri, opposite Fort Leavenworth. Almost from the beginning, a feeling of hostility was manifested towards them by the citizens of Missouri, which finally resulted, at the end of two years, in another removal by the govern-

ment, when they were located in Iowa, near Council Bluffs. Here, again, their home was of short duration, and they were removed a third time to their present location in Kansas, where they have remained for over thirty years. This reservation, however, they have now sold, and are about to remove for a fourth time within little more than a third of a century. Their new location is in the Indian country south and west of Kansas. How long it will be before the pressure of advancing civilization will again push them on in search of a new home, we cannot certainly predict. We may safely say, however, that it cannot be very long. We may scarcely hope that they will ever find a quiet resting place above the earth.

In their Kansas home, the Indians of the Woods have continued to manifest their greater adaptability to conform to the habits of civilized life. They have there subsisted to a large extent by agriculture. Some progress has been made in teaching them in schools, and the influence of religion still exerts its sway over them, or at least their religious teachers still command their attention and respect. Out of seventeen hundred and fifty, of which this band still consisted, according to the last report which I have seen, sixteen hundred are represented as subsisting by agriculture.

The Prairie Indians yet remain as wild and untamable as ever. They are still averse to the labors of the field, and enjoy the life of indolence, or else the excitement of the chase, by which, and their annuities from the government, they eke out a scanty subsistence. The finger of fate seems to be pointed alike at the most civilized and the most savage. Final extinction is the end of the way down which all are swiftly rushing, and it would seem almost practicable to calculate with mathematical certainty the day when they will live only in memory and in history.

They left Illinois thirty-five years ago with five thousand souls. At the date of the last report they had dwindled down to three thousand five hundred, and at this moment

their numbers can scarcely exceed three thousand. From this each one may calculate for himself when the last day shall have passed — when there will be no living representative of that powerful people who but a century ago exterminated a nation at a single blow at Starved Rock. The last of the Pottawatomies will then have ceased to be.

I shall close this paper with an account of the great war dance which was performed by all the braves who could be mustered among the five thousand Indians here assembled. The number who joined in the dance was probably about eight hundred. Although I cannot give the precise day, it must have occurred about the last of August, 1835. It was the last war dance ever performed by the natives on the ground where now stands this great city, though how many thousands had preceded it no one can tell. They appreciated that it was the last on their native soil — that it was a sort of funeral ceremony of old associations and memories, and nothing was omitted to lend to it all the grandeur and solemnity possible. Truly, I thought it an impressive scene, of which it is quite impossible to give an adequate idea by words alone.

They assembled at the council-house, near where the Lake House now stands, on the north side of the river. All were entirely naked, except a strip of cloth around the loins. Their bodies were covered all over with a great variety of brilliant paints. On their faces, particularly, they seemed to have exhausted their art of hideous decoration. Foreheads, cheeks, and noses were covered with curved stripes of red or vermilion, which were edged with black points, and gave the appearance of a horrid grin over the entire countenance. The long, coarse, black hair, was gathered into scalp-locks on the tops of their heads, and decorated with a profusion of hawk's and eagle's feathers, some strung together so as to extend down the back nearly to the ground. They were principally armed with tomahawks and war

clubs. They were led by what answered for a band of music, which created what may be termed a discordant din of hideous noises, produced by beating on hollow vessels and striking sticks and clubs together. They advanced, not with a regular march, but a continued dance. Their actual progress was quite slow. They proceeded up and along the bank of the river, on the north side, stopping in front of every house they passed, where they performed some extra exploits. They crossed the North Branch on the old bridge, which stood near where the railroad bridge now stands, and thence proceeded south along the west side to the bridge across the South Branch, which stood south of where Lake Street bridge is now located, which was nearly in front, and in full view from the parlor windows, of the Sauganash Hotel. At that time this was the rival hotel to the Tremont, and stood upon the ground lately occupied by the great Republican wigwam where Mr. Lincoln was nominated for the presidency — on the corner of Lake and Market streets. It was then a fashionable boarding-house, and quite a number of young married people had rooms there. The parlor was in the second story fronting west, from the windows of which the best view of the dance was to be obtained, and these were filled with ladies as soon as the dance commenced. From this point of view my own observations were principally made. Although the din and clatter had been heard for a considerable time, the Indians did not come into view from this point of observation till they had proceeded so far west as to come on a line with the house, which was before they had reached the North Branch bridge. From that time on, they were in full view all the way to the South Branch bridge, which was nearly before us, the wild band, which was in front as they came upon the bridge, redoubling their blows to increase the noise, closely followed by the warriors, who had now wrought themselves into a perfect frenzy.

The morning was very warm, and the perspiration was

pouring from them almost in streams. Their eyes were wild and blood-shot. Their countenances had assumed an expression of all the worst passions which can find a place in the breast of a savage; fierce anger, terrible hate, dire revenge, remorseless cruelty, all were expressed in their terrible features. Their muscles stood out in great hard knots, as if wrought to a tension which must burst them. Their tomahawks and clubs were thrown and brandished about in every direction, with the most terrible ferocity, and with a force and energy which could only result from the highest excitement, and with every step and every gesture they uttered the most frightful yells, in every imaginable key and note, though generally the highest and shrillest possible. The dance, which was ever continued, consisted of leaps and spasmodic steps, now forward and now back or sideways, with the whole body distorted into every imaginable unnatural position, most generally stooping forward, with the head and face thrown up, the back arched down, first one foot thrown far forward and then withdrawn, and the other similarly thrust out, frequently squatting quite to the ground, and all with a movement almost as quick as lightning. Their weapons were brandished as if they would slay a thousand enemies at every blow, while the yells and screams they uttered were broken up and multiplied and rendered all the more hideous by a rapid clapping of the mouth with the palm of the hand.

To see such an exhibition by a single individual would have been sufficient to excite a sense of fear in a person not over nervous. Eight hundred such, all under the influence of the strongest and wildest excitement, constituting a raging sea of dusky, painted, naked fiends, presented a spectacle absolutely appalling.

When the head of the column had reached the front of the hotel, leaping, dancing, gesticulating, and screaming, while they looked up, with hell itself depicted on their faces, at the "*chemokoman squaws*" in the windows, and bran-

dished their weapons as if they were about to make a real attack in deadly earnest, the rear was still on the other side of the river, two hundred yards off; and all the intervening space, including the bridge and its approaches, was covered with this raging savagery glistening in the sun, reeking with streamy sweat, fairly frothing at their mouths as with unaffected rage, it seemed as if we had a picture of hell itself before us, and a carnival of the damned spirits there confined, whose pastimes we may suppose should present some such scenes as this.

At this stage of the spectacle, I was interested to observe the effect it had upon the different ladies who occupied the windows almost within reach of the war clubs in the hands of the excited savages just below them. Most of them had become accustomed to the sight of the naked savages during the several weeks they had occupied the town, and had even seen them in the dance before, for several minor dances had been previously performed, but this far excelled in the horrid anything which they had previously witnessed. Others, however, had but just arrived in town, and had never seen an Indian before the last few days, and knew nothing of our wild western Indians but what they had learned of their savage butcheries and tortures in legends and in histories. To those most familiar with them, the scenes seemed actually appalling, and but few stood it through and met the fierce glare of the savage eyes below them without shrinking. It was a place to try the human nerves of even the stoutest, and all felt that one such sight was enough for a lifetime. The question forced itself on even those who had seen them most, what if they should, in their maddened frenzy, turn this sham warfare into a real attack? How easy it would be for them to massacre us all, and leave not a living soul to tell the story. Some such remark as this was often heard, and it was not strange if the cheeks of all paled at the thought of such a possibility. However, most of them stood it bravely, and saw the sight to the very end; but I

think all felt relieved when the last had disappeared around the corner as they passed down Lake Street, and only those horrid sounds which reached them told that the war dance was still progressing. They paused in their progress, for extra exploits, in front of Doctor Temple's house, on the corner of Lake and Franklin streets; then in front of the Exchange Coffee House, a little further east on Lake Street; and then again in front of the Tremont, at that day situate on the northwest corner of Lake and Dearborn streets, where the appearance of the ladies in the windows again inspired them with new life and energy. From thence they passed down to Fort Dearborn, concluding their performance in the presence of the officers and soldiers of the garrison, where we will take a final leave of my old friends, with more good wishes for their future welfare than I dare hope will be realized.

XI.

AMERICAN CERVUS.[1]

A PAPER READ BEFORE THE OTTAWA ACADEMY OF NATURAL SCIENCES, MAY 21, 1868.

PERHAPS no objects of natural history have been more neglected than the quadrupeds of our own country. This may be attributed to the want of facilities, on the part of those who have written on the subject, for that careful and patient observation which is indispensable to a full comprehension of the organization, habits, and peculiarities of the various quadrupeds which interest us. The labor is too great to be accomplished by any one or any hundred individuals. When a thorough interest shall be awakened on this subject; when scientific societies shall comprehend the magnitude of the field thus spread out before them, and address themselves in earnest to accomplish the work; when they shall comprehend that the observations which merely enable one to classify the different genera and species and furnish a few facts to amuse and interest a mere sportsman, without really instructing the careful student, do not satisfy the demands of science, — then we may hope that a beginning will be made of that patient study which may, to some extent at least, accomplish so great a work.

My own observation upon two species of the Cervus family, and a comparison of them with the best published authorities, have led me to appreciate how entirely defect-

[1] Since this paper was read, the author has prepared an elaborate work embracing the same subject, viz.: *The Antelope and Deer of America*. Fully illustrated. Boston: Houghton, Osgood and Company.

ive is our scientific knowledge in this department. I have had considerable facilities for the last six or eight years for making careful observations upon the common or Virginia deer and the Wapiti deer or elk, and yet I have made but a beginning in the observations necessary to an exhaustive scientific comprehension of the subject. From this we may appreciate how great is the work to be done before the scientific world shall have accomplished the task of laying before mankind a full knowledge of the quadrupeds of America.

The most approved work we now have on this subject is that by Audubon and Bachman. They accomplished, perhaps, all they promised, — that is, a classification of the quadrupeds, with a few anecdotes of the most important. Wherever they have attempted to go beyond this (at least in the cases of the two species I have named) they have fallen into many errors, some of which, in the course of my remarks, it will be necessary to notice and correct. I do not mention this censoriously. The task they undertook was so great that it was impossible they should do more than they have done. They have laid the scientific world under great obligations, and have reared to themselves a great and lasting monument.

The superficial marks which assign to each of these species its appropriate classification are properly described. Yet this description is generally from a single specimen, while, in fact, individuals differ very widely, both in color and form; so much so that even among the few I have in my parks we might almost persuade ourselves we have distinct varieties. Among the fifty or sixty deer which I have there are three distinct shades of color, which also seem to be associated with a peculiarity of form. The lightest colored have long legs, and long, slim bodies; they have the largest horns, do not fatten readily, and are more wild and restless than the others. Another class are of a considerably darker shade; in some instances quite black along the

top of the neck and down the back, and with a black tail, as distinctly so as the California deer. They have frequently other black marks. I have one specimen with a distinct black line over each eye, of a triangular form, pointing towards the ear; and several others in which this mark is quite visible, though not so conspicuous, giving them rather a ferocious appearance. This variety has short legs, rather short, heavy bodies, are very tame, and always the fattest in the park. The smallest variety, both in size and numbers, is of a distinct russet color, and has less white under the throat and belly than either of the former. In one specimen the white is nearly wanting beneath the lower jaw, and there is very little under the neck. They are not so wild as the first class mentioned, but are more timid than the second, and in their disposition to fatten seem also to be intermediate between the other two.

There seem to be distinct classes of the elk which are as manifestly hereditary as those of the deer, especially in form and size. Of these I recognize among those in my parks two classes, varying in form and size, but not materially in color, except one large sized doe, which I consider quite exceptional. When I purchased her, four years ago, she had several large white spots distinctly defined, but of irregular shape. Every year subsequently she has had these white spots, but never since as distinctly marked as then. As she grows older the white hairs have become more evenly dispersed over the whole body, till now she may be called rather a gray than a spotted elk. In none of her progeny have these white spots been observed. Nine of the twenty-one elk in my parks I have purchased, and from three different sources. One variety is much larger and has longer legs, and is much more graceful in form and carriage than the other. The largest variety seem to be the most hardy, fatten the most readily, and are less vicious.

The most marked difference in physiology between the deer and the elk is found in the coat or outer covering of

hair. The deer, unlike most other animals, sheds its coat twice a year; and it is a little remarkable that Audubon and Bachman have neglected to mention this interesting characteristic, which is so well understood by every frontiersman, and must have been well known to them. In the spring, about the time other quadrupeds shed their winter coats, the common deer is divested of the costume of heavy, tubular hairs which has protected it through the winter season, and a thin, rufus-colored coat, much firmer, shorter, and more solid, succeeds. As he parts with his winter coat, his fat also leaves him. He has less spirit and vivacity, is more solitary in his habits, and altogether seems to be in poor health. These characteristics are observed while he continues to wear his red coat, as it is called. This is not confined to either sex or any age, but is universal, as well with those which have been emasculated as with the perfect animal. It is not attributable to the parturition of the female or the growth of the horns of the male. It is observed equally with the wild deer of the forest and those partially domesticated in parks.

In the month of August the deer begin to improve sensibly, and then they begin to shed the red coat, which, during the month of September, has entirely disappeared, and is replaced by the blue, as it is called, which at first is short and fine, but by winter attains a length of two inches or more, and each hair has more than doubled in diameter; in our latitude the hairs continue to increase in length and size till the month of February, forming a very dense, heavy coat, effectually protecting the animal from the storms and rigors of winter. Indeed, so perfect a non-conductor is this natural covering, that small bodies of snow, which the animal had failed to scrape off from the leaves in making his bed, remain all night under him without thawing. This blue coat, as the season advances, assumes a sensibly lighter shade. I have observed, also, that, as the animal advances in age, the blue coat grows a shade lighter each year.

I may here remark that the diversity of colors by which I have ventured to distinguish different classes of deer in my park is confined almost entirely to the blue coat. But very little difference is observed in the shade of the red. A very light coat of fur is disclosed upon the deer under the long, coarse hair which constitutes his principal dress.

A considerable majority of the deer have more or less white upon the foot, rising in a narrow strip from between the hoofs for an inch or two, and sometimes extending in a border quite around the hoof. In different animals the amount of white upon the feet differs greatly, and is not even uniform on the same animal. Some of the feet may have more than others, and in many specimens I have found it entirely wanting. This is more frequently the case with the smallest or rufus-colored variety than with the others.

The covering of the elk also forms an interesting study. The general characteristics of the hair are almost identical with those of the deer. They are coarse and hollow, and of an elastic, spongy texture. They vary in length from six to eight inches about the neck, where they are almost black near the ends, to two inches upon the back, where they are lightish yellow and gray near the extremities, and of a much lighter color below. This shade varies much in different specimens, in some being a dark brown underneath, while of a light yellow for half an inch at the extremities.

Under the microscope, the hair of both appears to be as nearly alike as possible, except that in the elk the hair is more crinkled. The hairs have very smooth surfaces, with the slightest appearance of infinitely fine scales or checks. At the outer ends they taper, for about one quarter of their length, to a point as sharp as a needle. They taper very rapidly for a short distance to the root, which is in length about ten times the diameter of the hair. Assuming the root to be two and a half inches long, which is about the appearance under my instrument, its diameter an inch be-

low the surface of the skin is a little less than an eighth of an inch, while at the bottom of the root it is nearly twice that size, and is rounded off at the extremity. In form it much resembles the pipe of an ordinary syringe.

The very extraordinary feature of the deer in his eyelashes I should, perhaps, never have discovered but by accident. I happened to be in the park on a frosty day in winter, and was soon surrounded, as usual, by my pets, when I was surprised to observe that the eyes of each were covered with a sort of net-work of hoar frost. Upon examination, I found that each eyelid was provided with a system of very fine jet black hairs, about two and a half inches long, those from the upper lid curving irregularly down, so as to project completely over the eye. These are undistinguishable by the casual observer. They were now covered with frost, presenting a novel appearance, and hence at once attracted my attention.

The fawn of the elk, which when young has a spotted coat, somewhat like the fawn of the other deer, though much less brilliant and beautiful, sheds this more ornamental coat when about three months old, like the fawn of the common deer, and takes on one of the hue which he is always after ward to wear, except that it grows a shade darker each year, till it is two or three years old.

My observations do not quite agree with those of Audubon and Bachman, that the yellow patch on the rump "is but scarcely perceptible in a specimen two years old, and in one eighteen months old it was not visible." Without an exception, in my parks, the mark distinctly appears with the coat succeeding the ornamental one, so that it can be recognized as far as the animal can be seen, though the contrast with the surrounding hair becomes more marked as the animal grows older; yet this is as much due to the deepening of the darker shade of the one as to the lighter shade of the other.

The most remarkable characteristic of the covering of the

elk is the heavy coat of fur underneath the hair. The microscope discloses this to be a true fur, as well as that of the deer before mentioned. When compared with the fur of the otter side by side, it is undistinguishable, except in size. It appears to be about half as large again. It has the same rough knotty surface, and both alike terminate abruptly at the extremities, without any taper at the end. It is difficult for the naked eye to see the extreme point of the hair, while it readily detects the end of the fur. With the elk the greater portion of the hair is first shed while the fur still adheres, which finally peels off in large patches, and may be gathered in bushels from shrubbery in the park. When this peelage takes place, it leaves the skin almost naked, the new coat hardly having made its appearance. With his comfortable covering, the elk seems quite indifferent to the most rigorous winter weather or the severest storms of sleet.

I now come to the most interesting feature of the physiology of the Cervus family; for, although I have only had an opportunity of examining critically two members of the family, I have no doubt that the facts I have observed in these will be found to hold good with all the others. I allude to the horns.

Until very recently the horns of the cervine group have been supposed to be distinguished from those of other ruminants by two striking characteristics: first, that the horn is perfectly solid; and second, that it is deciduous. It has been recently proved by Mr. A. D. Bartlett, superintendent of the Gardens of the Zoölogical Society of London, that we have, in this country, an intermediate link between the solid horned and the hollow horned ruminants. This is the Prongbuck, or Rocky Mountain Antelope, of which I have hitherto been able to procure but one specimen for my parks, and I unfortunately lost that, after about six months, before I had time to make those careful observations upon it which are necessary to a proper comprehension of the

subject. This beautiful animal has long been known to have a hollow horn, but Mr. Bartlett, by observations upon the buck in the Society's gardens, discovered that the membrane between the shell of the horn and the core, at the proper season, commences to grow, lifting the shell from its seat, till finally it drops off, leaving the pith covered with a thick vascular membrane, coated with a coarse hair, not indeed at all resembling the soft, delicate velvet on the growing horn of the Cervus family, yet precisely answering to it. This membrane continues to grow till finally it matures into a new and perfect shell, becoming divested of its coat of hair and vascular appearance. In London the horns were dropped on the 7th of November. Probably in their native wilds this operation is deferred till the spring, else the frosts of winter would destroy the new growing horn.

But to return to the proper subjects under consideration. Only the males of the deer and the elk are provided with horns, although in most specimens of the female elk there is a sharp, bony protuberance in the place of the horn, which is a sort of rudiment of that appendage. While the horn, with these animals, is the weapon of fierce warfare, it is not usually resorted to, except in cases of slight demonstrations or in real emergency; but this is more strictly the case with the deer than with the elk. When all questions of superiority have been settled and acknowledged in the herd, the fore feet are the weapons in use, as well by the bucks as the does. If one attempts to drive another from an ear of corn, and the latter is inclined to resist, instead of locking horns over the coveted morsel, both will rise upon their hind feet, when a few active passes are exchanged in true pugilistic style, always resulting in the success of the aggressor, from which I infer that the real question of superiority has been already settled.

There is a marked difference in the phenomena of shedding the horn between the common deer and the elk. With the former there is much less uniformity in the time of shed-

ding than with the latter. In 1866 not one deer in my parks carried his horns through the month of December. Last year not one had lost his horns in December, while most of them were dropped during January, and two of them were carrying them on the 7th of February, 1868, when I caught and sawed off the horns of one, as I shall subsequently mention. They then seemed to be as firmly set upon his head as ever. One of these stubs was shed on the 27th, which was reported to me by the keeper, when I directed him if the other was remaining in the morning to seize hold of it and try and pull it off. I found it on my table the next morning. He reported that it came off with but little resistance, but the animal dashed away as if considerably hurt, and when he came up in the evening the seats of both horns were covered with coagulated blood. One year I noticed that nearly all the bucks carried their horns till February, and quite a number till March. I have sought, without satisfactory results, for the cause of this difference in the time of dropping the horns. The season when they carried the horns the longest, the weather was not remarkably cold, but they were in rather poor condition, having depended principally upon what they could pick up in the parks. At the time when they shed their horns so early, they were in about the same condition as the former, nor had the winter been very cold. This year, when the horns have fallen off sooner than in the first instance mentioned, but were carried longer than the year immediately preceding, they have been fed very high, and are all very fat. There certainly is a cause for this difference in the times of dropping the horns, either in the temperature, the condition of the animal, the variety of his food, the supply of water, or some other not suspected circumstance, which I hope yet to discover. Audubon and Bachman state that the new horn of the deer commences to grow as soon as the old one is shed. This is not so ordinarily, in our latitude at least, as I shall presently show.

The blood continues to circulate through the horn till pretty near the time when it is shed. After the horn has become quite matured and its blood-vessels quite closed, so that the blood can no longer penetrate it, the edges of the seat of the horn manifest a change, commencing to swell and show inflammatory action, and around the edges the horn begins to separate from its seat to a limited extent, and in this seam of separation are deposited several layers of a bluish substance resembling that of the hornet's nest, often seen suspended from the limbs of trees. I think my observations justify me in asserting that the horn is loosened by the action of the blood below it, which no longer finds admission to the horn itself after it has become fully matured, and that the animal carries his horns but a few weeks at most after it has become thus matured. The horn proper does not commence growing on the deer as soon as the old one is shed, but the seat of the horn remains a bald, naked patch till most of the heavy frosts are over, and the deer can begin to find a little young vegetation, usually in the month of April in this latitude. When the dormant blood-vessels at the seat of the horn begin to assume vitality, a vascular membrane is formed over it, covered with the rudiments of the velvet. This rises very slowly at first, but presently assumes the form of a column of the full diameter of the perfect horn, rounded at the top like the rising column of mercury in the barometer. Till after this is an inch or two high, the velvet upon it is usually very short, and then showing the bluish purple substance gorged with blood apparently in a high state of inflammation. The growth becomes more rapid as the season advances. For some time the column rises in a single stem; at length the upper end begins to widen, and soon the rudiments of an antler may be seen, which presently becomes distinctly developed, and progresses *pari passu* with the main stem, which again, at the proper time, widens out at the extremities, and then puts out another antler, and then another, till

all its branches become completely developed, when all grow on to perfection together. The horn grows only in length, not in diameter. The velvet of the horn gradually increases in length and thickness up to the very time when the external growth of the horn is completed, when the blood gradually ceases to circulate through it, but it is generally rubbed off by the animal while the vascular covering is still saturated with blood, though sometimes shreds of it continue to adhere through the year. I have a horn before me now, dropped from a perfectly healthy animal three years old, upon three inches of the extremity of which and down to the upper antler, together with that antler two and a half inches long and the broad palm at their junction, the membrane is unbroken, from the lower part of which shriveled shreds are pendent, possessing a considerable degree of tenacity. Where this membrane upon the horn is unbroken, in external appearance it much resembles a thin sheet of gutta-percha drawn over the horn. Nearly all the fine hairs constituting the velvet covering are gone, leaving a black, polished surface. No doubt this covering would always remain upon the horn, but for the instinctive habit of the animal to remove it by rubbing against small trees or saplings as soon as it has attained maturity, and while it is completely saturated with blood. I have never observed them at the commencement of this process, but I have noticed them when it was but partially completed, and have found the membrane hanging in shreds from the horns, which were all covered with fresh blood, with which the shreds were also saturated. They seem to have a choice in selecting the trees for this exercise — more sugar-maples than all other trees are thus peeled and polished, then basswood, and then wild apple-tree. Of these latter trees there are comparatively few in my grounds, while the deer rarely use the oaks and hickories, though these are the prevailing trees where they range.

The horn, in its early growth, seems to possess a fever

heat, but this gradually diminishes as the horn matures. It also seems to be furnished with a complete nervous system, for the young horn is exceedingly sensitive. It bleeds at the least abrasion. This sensitiveness diminishes as the horn matures, till I think it has quite disappeared when the velvet is ready to be detached.

It would be interesting to study the progressive structure of the horn itself, but to pursue this thoroughly would require the destruction of a number of animals, which I have not yet felt inclined to do. I have, however, been able to get considerable light on the subject by observation upon the horns of imperfect animals which have been broken off, as I shall presently notice, and by sawing off apparently matured horns of perfect animals.

Before I proceed to that branch of the subject, I must note the difference between the elk and the deer as to the time of shedding the old horn and growth of the new. From some cause, not yet thoroughly investigated, there is great diversity among the deer as to the time of shedding the horn, ranging from the first of December to the first of March. It is not so with the elk. They all shed during the month of April, or as soon as they are able to crop a little fresh vegetation, when the new horn immediately commences its growth, scarcely three days elapsing before it has made a suitable start. About the same time, also, the horn of the deer commences its growth. The description of the progress of the one will answer for that of the other, only the horn of the elk usually matures, so far as to disengage the velvet, a few weeks earlier than that of the common deer.

In both species the first horn appears when they are about one year old, and usually the first horn is what is called a spike — that is, it has no prong. In specimens which are dropped early in the season, the first horn attains a considerable size, and so far matures as to shed the velvet before winter sets in, and, in some cases, more commonly with the

elk, a prong puts out, frequently four or five inches in length. In the spring of 1867 I had three very fine specimens of elk, with their first horns, from which the velvet had peeled in the November previous. The horns of two of them showed fine prongs. One of these I presented to the Central Park, New York. The other had the longest horns of the three, but no prongs. One of these horns I have now before me. It is twenty-five inches long, following the curve, and weighs thirteen ounces, after seasoning nearly a year. With specimens dropped later in the season the horn is proportionably smaller, and frequently does not peel till later in the winter or spring. I have now two specimens with spike horns, on one of which they are about ten inches long and on the other not more than two and a half inches long, which were peeling in the middle of February. Invariably I have observed that the second set of horns of the elk — that is, the growth when he is two years old past — have the brow-antlers and the bez-antlers in perfect form, and one or two antlers above them. So, also, the second horn of the deer nearly always has the brow-antlers and the bez-antlers, but very rarely more.

There is nothing reliable in the quite common supposition that the number of antlers on the horn of the deer will indicate his age, one on a horn answering to each year. It is not uncommon for one of the same age to have twice or three times as many prongs as another, though, as a general thing, the most prongs are formed on the oldest animals. I have never had one in my parks with more than five points to the horn, while I have two sets in my possession from deer killed twenty years ago, one by Mr. Mackey and the other by myself, the former of which weighs five pounds and one ounce, and has, on the right horn, twelve points, or eleven prongs, and on the other eleven points. The other set, which was from a deer killed by myself, weighs five pounds and eleven ounces, and has six points on each horn, also the stub of a prong broken from the left horn. On each of these horns the brow-antlers are bifurcated. One of the

prongs on the brow-antler of the left horn of the largest set is five inches long. Here we see that the largest horns had only about half as many prongs as the smaller ones. Altogether they are the finest specimens I have ever met with. In general appearance they are much alike, and I presume were from animals of about the same age, and fully matured.

Audubon and Bachman say: "In connection with this subject, it may not be uninteresting to notice the effect of castration on the horns of the buck. When this operation has been performed during the season when the horns are fully grown, it is said they are not dropped, but continue on the head for many years; when the operation has been performed after they are dropped, there is no subsequent growth of horns, and the head appears ever afterwards like that of a doe."

I quote this to show how imperfect hitherto has been the knowledge of the most eminent naturalists of the physical habits of these animals under certain circumstances. I have experimented in this direction with many specimens of the deer of various ages, and with two specimens of the elk, one four and the other five years old. If the operation be performed on either species when the horn has become hard, whether immediately after the velvet is shed or in midwinter, invariably the horns drop off within thirty days, and the seat of the horn remains naked till the following spring, when a new horn commences its growth at the same time that the growth of the horn commences on the perfect animal, and the growth progresses at about the same rate till the velvet is shed from the horn of the perfect specimen, when the growth nearly ceases upon the mutilated animal, but with the latter the circulation does not cease in the vascular covering, which does not dry up and peel off. The horn retains its velvety covering, it continues warm to the hand, and is carried by the deer till severe frosts have frozen the horn through, when it breaks off quite close to the head,

as far down as the blood has been congealed, leaving the butt of the horn still adhering to its seat, and this never does drop off. This soon heals over even during the winter, the black cuticle covering the wound having but the rudiments of the velvet upon it, frequently showing a raw spot produced by slight abrasions. At the proper time in the spring a new horn shoots out from the old stump, and so the process is repeated year after year in this latitude, where the frosts of winter are always sufficient to freeze through the horn of the Virginia deer. If the operation is performed when the animal is young with a small spike horn, the new horn will never exceed the old one in size or length, but will approximately correspond to it; and if the animal be aged, with horns of several prongs, the velvet horn will correspond, both in size and number of prongs, very nearly, though rather diminished in perfection of form, and each succeeding year the new horn shows less perfection of form than the one last broken off, although the difference is but slight. Always, when the new horn shoots out from the old stump, that stump enlarges somewhat in diameter, and becomes more and more *warty*, as it is termed, though this is much more the case when the experiment is tried with a young subject than with an old one. The first deer I ever owned, which was as fine a specimen as I ever had, was sent to me by some unknown friend. He had been emasculated before he was sent, but so recently that one horn, a spike about eight inches long, still remained. At the proper time in the spring new horns put out of about the size of the old, which remained in velvet till late in December, when they broke off. From the stumps new horns again put out the next year, not quite so long, but the stumps enlarged so as to quite make up the full amount of new growth; and so this curious process went on year after year, the stumps enlarging and the main stem diminishing, while the nobs or warts on the enlarged stumps had increased in size and length till October, 1865, when I presented him to the Commissioners

of the Central Park, New York. At that time his head was ornamented with two large protuberances two and a half inches in diameter, covered over with points, some of them nearly one inch long, while on one side two shafts projected nearly four inches long, and on the other was one not more than five inches long. What changes have since taken place with this interesting specimen I do not know, but I am sure it would have been an interesting study for a naturalist to have watched them carefully. This specimen was exceedingly domestic, docile and playful, and was never happier than when two or three children were hanging about his neck, scratching his head or smoothing down his soft, glossy coat. He would never allow me to take a stroll by myself in the park. Yet he was ever a welcome companion; although, if I sat down in the deep shades of the glen to enjoy the silent solitude and the perfume of the wild flowers, he was soon searching my pockets for a bit of cake or a crust of bread, or a nubbin of corn. I have never seen him but once since, and then at a distance, for the gentlemen in gray uniforms would not allow me to approach the fence for a near interview with my old pet, but he still remembered my voice at a distance of sixty feet, and came as near to me as the enclosure would allow. I know not if two years and a half of separation have destroyed his taste for human society. It is to be regretted that his fitness and manifest fondness for it could not have been more indulged than is probably practicable where he now is. It may be I did Billy a great wrong in sending him to the metropolis, where his many excellences, I fear, have not been duly appreciated. If those who can appreciate a certain class of affections and attachments will pardon this little episode, I will return to the dry detail of facts, which may be more interesting in a scientific point of view. I have never, in any other instance, succeeded in obtaining so remarkable a growth of the stump of the horn as this. Yet the same

thing is observed in all cases, though in a less degree, and, as before observed, more in the young than in the old.

Another distinction is observed. Generally the younger the subject of the operation is, the higher the apparent state of maturity to which the horn attains through the season. I have one specimen whose horn attains a length of about seven inches, upon which the vascular covering during the month of December dries up upon the new growth, and several inches of the upper part peel off, presenting to the sight the naked horn, with a hard crust on the outside, appearing much like the horn of the perfect animal. This breaks off before the first of January, showing that inside of this hard shell the circulation has been freely kept up, till arrested by the action of the frost. Indeed, in most instances, this imperfect horn has a hardened shell on the outside, from which the velvet may be peeled without a flow of blood from the exposed portion. I have been anxious to preserve the horns upon the heads of some of those imperfect animals, so as to observe the second year's growth; but I have never yet succeeded in doing so with the smaller deer. There is the most vitality and the freest circulation in the middle of the horn. These diminish towards the outside, where they are almost wanting in the imperfect animal after the time when the velvet peels from the horn of the perfect buck.

I have been more fortunate in carrying the horns of the imperfect elk through the winter. The one which killed Mr. Dimock was operated upon the next day, — that is, September 11, 1865. At that time his horns had been in perfect order for some weeks and were very sharp. As expected, they dropped off in the latter part of October. He was then past four years old. The next spring grew a pair of horns of considerable size, but very imperfect as compared with those grown upon the deer. While the new horns were larger in diameter than the ones which had been shed, they were shorter and deficient in prongs. As was

expected, these horns continued in velvet the ensuing winter, and fortunately he carried one through the winter without injury; the other, during January, broke off about four inches from the head. Here is the fragment. You observe that the fracture is not square, as is always the case with the other deer's horns which are broken off during winter. I consider this the most interesting specimen which I ever procured, for from a careful study of it I learn more than from any other. It teaches us more than can be learned from the head with the stumps of this and the remaining horn upon it, which I had the honor of presenting to the Chicago Academy, when I killed the animal, in December last. A zealous naturalist may, with his microscope, spend days in the study of this specimen, and still leave much to be examined. Here we have the fine hairs, called the velvet, of about ten months' growth, in some places half an inch long, covering the vascular cuticle, except in a few places where it had been removed by violence. In these places we have this denuded skin covering the horn appearing like a thin sheet of gutta percha. Then, in other places, this skin is peeled up, exposing the naked horn and showing more perfectly the character of the skin. Here, also, we can see the blunt ends of the horn, in strong contrast with the sharp points of the perfect horn; and, most interesting of all, we have the fracture, showing us plainly the internal structure of the imperfect horn. You observe that a conical section of the centre of the horn, an inch in diameter and an inch long, was drawn out of the portion remaining on the head, leaving in the end of the stump a corresponding cavity. This cone, you see, is covered with coagulated blood, while only small patches of blood are observed on the surrounding portions of the fracture. This blood evidently flowed out immediately when the horn was broken and before it had time to congeal, which must have soon occurred, for the weather was freezing cold. You also observe evidence

of great violence upon the horn, inflicted, no doubt, at the time it was broken off. The marks of violence upon the horn, the irregular character of the fracture, and the unmistakable evidence of a flow of blood at the time, abundantly convince us that this horn was not broken off because it was frozen through, as has been the case in every instance which I observed with the deer. With the frozen horn the fracture is always regular and directly across the horn, and there is not the least evidence of a flow of blood, although the entire cross section always shows the presence of blood. The stag carried the other horn through the winter. I have another stag elk in my parks which has carried his horns in full velvet through the past winter, with hardly a scratch upon them. I conclude, then, that the volume of the imperfect horn of the elk is such as to resist the frosts in this latitude, which has enabled me to make some interesting observations which I could not make upon the deer, for, as before stated, I never could get one through the winter unbroken.

I observed, with much interest, the stub of the broken horn, and the one remaining unbroken, when the season arrived last year for the commencement of the new growth, and was rather disappointed that it did not meet the expectations which had been excited by my observations of the horns of the mutilated deer. While there was a perceptible increase in the circulation of blood, both through the vascular covering and the body of the horn, there was very little increase in the volume of the horn itself. A new growth partially covered the end of the broken horn, but a new horn was not projected from it, as has been always the case with the deer. This may be owing to the fact that the stump is several inches long, while with the deer they have always been broken off quite close to the head. Upon the unbroken horn some protuberances appeared, and the ends of the prongs gave evidence of a new but stunted growth, not to exceed an inch or two, and I

cannot say that the horn sensibly increased in diameter. Altogether but a very few pounds were added to its weight. I cannot express the belief that the horn of the stag elk will grow to any extravagant proportions, though he may carry it for years. I am aware that it is unsafe to deduce a general rule from observations of a single specimen for a single year. Hence I hope to confirm or change my conclusions by observations of the specimen I now have, whose horns are larger and more perfect than the one I sent to Chicago, from which I have been obliged to make my deductions, which I look upon as unsatisfactory as yet.

So far as I am informed, hitherto naturalists have concluded that when the horns of the Cervus family have become divested of the velvet they have completed their growth and attained their perfection. I am enabled to correct this impression. In April, 1867, not long before the time for the elk to shed his horns, I sawed off the horns of the specimen I sent to New York, perhaps two inches from the head, and found the blood to flow so freely from the horn on both sides of the saw as to stain it the whole length used, but the flow was not so copious as to drop from either portion of the severed horn. Now this took place six months after the horn had been entirely denuded of the velvet covering, and had been well polished by being rubbed against the trees. This clearly establishes the fact that the solid horn of this class of ruminants has not, when divested of its sensitive outside covering and become a perfect weapon of offense and defense, become completely matured, with its blood-vessels closed, like the shell of the hollow-horned animals; but, like the pith of the latter, the inside of the solid horn remains the seat of active vitality, through which the blood freely circulates, progressing all the time towards perfection in its growth to within a few weeks, at most, of the time when the horn itself is shed. We are so prone to theorize that we are apt to form theories upon observations too limited; and when theories are

once formed and announced, we are inclined to make subsequent observations to conform to them, rather than correct our theories by new observations. The theory which I have been inclined to form from the limited observations already made is, that at the period when the velvet peels from the horn only the outside shell of the horn has completed its growth so as to arrest the apparent circulation of the blood in it, while within this shell the substance of the horn is open and spongy, like the pith of the hollow horn; that, as the horn progresses towards perfection in growth, the shell increases in thickness, closing up first towards the extremities, — the active circulation extending continually a less and less distance from the head, and the section of circulation becoming less and less in diameter, till finally all the blood-vessels in the horn proper are closed, and the further circulation of the blood in it shut off, while the blood-vessels extending to the butt of the horn still remain open and active, thus allowing the blood to impinge, as it were, against the butt of the horn, which now absolutely refuses it admission. In the course of time, either long or short, this tends to loosen it from its seat and prepare it to be detached by the least violence, or at last to drop off by its own gravity. In support of this theory is the fact that six months after the velvet had been peeled off, and within less than a month from the time when the horn itself might be expected to fall, I found the blood freely circulating through the centre of the horn, for one half its diameter and two inches or more from the seat of the horn. I did not, as I should have done, cut the horn up into short sections in order to determine certainly how far the circulation extended. Another fact in support of the theory suggested is, that always, so far as my observation extends, at the moment the horn is detached blood flows freely from the seat of the horn, but none from the horn itself. I was once walking in the park, when one of my pets came up and claimed the expected gratuity. He had but one horn; the other had

been recently dropped, for the blood was still trickling fresh from its seat. While I fed him with one hand, with the other I grasped the remaining horn, which by a slight force was separated from the head. The animal jumped back and circled round actively, and shook its head violently, as if it suffered considerable pain. The blood flowed freely from the seat of the horn, so as to run down upon the cheek, and even drop to the ground. It was some minutes before he could be induced to approach me and take corn from my hand. The butt of the horn itself was without the least stain of blood, but was as white and clean as the purest snow. Still, in many other cases I have found stains of blood on the fresh end of the horn; not, however, presenting the appearance of its having flowed from the horn. The surface of the horn at the point of separation is not smooth, but presents more the appearance of having been sprinkled with white sand upon a moist surface, to which it had adhered.

With the view of throwing more light on this interesting subject, on the seventh of February, when but two out of more then twenty bucks retained their horns, I caught one and sawed one horn off about an inch from the head, and the other as close to the head as I could without injury to the seat of the horn. I confess to some disappointment when the microscope revealed no trace of blood in either of the severed horns. The other buck lost his horns within the week following. This one carried the pieces remaining for twenty days longer, when they were separated, as before stated. Probably he would not have carried the full horn as long, as it would have been liable to accidental violence. I have never yet seen, nor have any of my men, the horn drop from a deer's or an elk's head; but I am inclined to think that the operation is assisted by some slight violence, probably accidental, and I am strengthened in this opinion by the fact that the deer whose horns I sawed off carried the stumps so long. If, as some have supposed, the animal is

induced by some degree of irritation to rub them off at a certain stage of maturity, the same cause must have existed after the horn was sawed off as before, and he would surely have rubbed off the remaining portions.

While it does not destroy, the fact that no blood was detected in these horns tends slightly to qualify the theory suggested, which would require the circulation to be kept up in the horn till about the time it was ready to be detached. It should also be observed that the principal observations detailed have been made with a young elk, carrying his first horns, and a deer with his fourth set of horns. Whether there is a slight difference in the laws as applicable to the two species, or what influence the different ages may have had, remains to be determined by subsequent observations. Of the structure of the horn itself, in its various stages of growth, my observations are still too limited to enable me to speak with enlightened confidence. In external appearance, at least in their earlier stages of growth, those upon the perfect and the imperfect animal seem to be identical. At first the outside covering and the internal portion appear to form a homogeneous mass, soft and somewhat elastic, and quite sensitive, so that the most docile refuse to allow the least familiarity with it. It is warm to the touch, as if highly inflamed. As the growth proceeds, the apparent inflammation, as well as the extreme sensitiveness, seems to subside, and we may well suppose that a line of demarcation is gradually established between the vascular covering and the body of the horn. In the mean time the fine hair covering of the former, only the rudiments of which at first appear, establishes itself as a dense coat, the roots of which appear to terminate at the shell of the horn. In the perfect animal this growth proceeds to final perfection, while in the mutilated animal it is at a certain stage, and not long before the horn of the perfect animal has attained such a degree of maturity as to dispense with its outer coat, at least partially arrested,

so as to prevent perfect maturity. Although impeded, the vascular connection between the outer cuticle and the horn proper is not entirely severed, and the circulation between the head of the animal and the horns goes on perpetually, and so the horn can never be detached from its seat. Even in the perfect animal, till perfect maturity, when the horn is ripe for dropping off, its union with the head is so perfect that no violence can detach it from its seat. If sufficient violence be used, the horn will break off above the seat, or will tear away a portion of the skull. Nor does the death of the animal in the least weaken this union. The same results will follow extreme violence after the animal has been dead a year and the head bleaching in the weather, as when alive. Altogether, there are many curious and interesting facts connected with the horns of the Cervus family of ruminants requiring yet much careful and critical observation before the subject is fully understood.

The habits and dispositions of these animals have also formed an interesting subject of observation and study. By nature the common deer is much more timid, if not more wild, than the elk; although the former, when brought up by hand and perfectly familiarized with man, is tamer than the latter. The deer raised in the park are always shy, and will flee at the approach of man. When the rigors of the season prevent them from finding their necessary aliment while ranging the park, and they are forced to come and take the food distributed to them by their keeper, still they will not allow him to approach within a considerable distance of them; and if a stranger comes in, they all at once raise their white flags and dash off to a safe distance. Some seasons, when I have allowed the does the range of the north park, which is much secluded, and where the fawns rarely see a human being, the young utterly refuse to come up for food, even when they cannot get enough in their range to sustain life. During one severe winter I lost over twenty fawns from this cause. Since then I have

kept the does in the south park during the summer, which is daily frequented by visitors, and where they become accustomed to the sight of man.

It is not so with the young elk. Those raised in the park are scarcely more wild than a calf which has had no more familiarity with man. The elk are all raised in the north park, which is visited by comparatively few, owing to the bad reputation of some of the elk for unkindness to strangers, and even their keepers. Still they are never wild. On the approach of a stranger they will trot off from their mothers a little way and then look earnestly around, but they do not flee in fright like the deer; and by fall and during the winter the young are but little more shy than the old, and so far from experiencing any difficulty to get them up to feed, all are on hand, young and old alike; and when the keeper passes through the herd they all treat him with about the same indifference, except the old bucks, with whom he must settle accounts in the beginning, using a pitchfork as arbiter, and it sometimes takes half a dozen hard thrusts with the fork from behind a tree before an obstinate buck will yield, which he indicates by tearing away at a crashing rate, uttering the most frightful screams. When this mastery is once established it is admitted for that winter, although he must submit to allow the brute to make faces and grate his teeth at him from a respectful distance. There is about the same difference in disposition among the males of both the elk and the deer that is observed among the bulls of the common cattle. Some are by nature very vicious, while others are more docile. The buck elk, however, after he is four years old, is more vicious and dangerous than the male deer. Some are so wicked that they seem nearly beside themselves at the sight of a human being, from early in September till the middle of December, and even after that they require caution and severity of management. Others, again, never get so wicked as to render it unsafe for a resolute man to go

among them, even at the worst season; though the most gentle during the fall will make threatening demonstrations, which they will follow up on discovering the least signs of fear, and that they are quick to detect. The largest elk I ever owned (he stood sixteen hands high on the withers when five years old) was never really unsafe at any season; while others I have had would make the most terrific charges against the fence, so that it would tremble for a long distance, in order to reach the keeper on the opposite side. When there are several buck elk in the park, the master among them maintains such discipline that the others manifest but little of that wickedness. Remove the master, and his successor in rule will, in three days, succeed to his viciousness, either modified or enhanced by his natural disposition. The male deer is at no time as wicked as the elk in his natural disposition, and his constitutional timidity is so great that I have never in a single instance seen the least demonstration by one raised in the park by the side of its dam. When raised by hand and petted, most of them lose all fear of man, and then a wicked disposition shows itself in some, which makes them dangerous to children, and I have seen them make demonstrations at men; I had one that questioned the right of a clergyman to walk the park so strenuously that he made him leave with much less of his cloth than he wore when he entered. A majority of the petted bucks show more or less wickedness during the fall; and yet I have had several which remained as tame and as innocent as the does the whole year round. I have one now that a child can be with alone at any time, without the least danger.

There is a wide difference in tastes and habits of feeding between the two species. The elk are promiscuous consumers and hearty eaters. They require quite as much food as the same number of black cattle, but are much less particular as to its quality. In summer they eat grass and browse, and seem to prefer a large portion of the latter;

especially after midsummer, when the leaves of the oak and hickory have become matured and tough, they denude all the shrubs and branches within reach, so that in a few years they clear their range of the undergrowth, by not only removing the leaves, but nipping the twigs to the diameter of a quarter of an inch. They select the most stringent first, preferring the oak, the hickory, and the poplar, the wild apple and the plum, to the hazel, the maple, and the elm; and so of weeds, they prefer the bitter to the sweet. The burdock is their special favorite. They dig out the roots so effectually that not one can ever be found in their range the second year. Even in winter they gather the dry oak leaves within their reach on the trees, though they reject those which have fallen. They keep in good order on cornstalks alone, and eat with apparent relish damaged hay, which common cattle would reject, unless severely pressed by hunger. Indeed, quantity is to be considered rather than quality, in feeding the elk.

The common deer, too, is fond of browse and prefers the the most stringent vegetation. He is, however, a delicate feeder and a small eater. I have often been interested, when sitting in the shade surrounded by my pets, to observe them select their food. After they despair of getting more from my hand or pockets, they will turn away with a languid air and commence selecting from the surrounding vegetation. Perhaps first is chosen a single blade of blue grass, then a leaf of white clover, then a wild flower, then a tender weed, and, lastly, the leaf of a shrub and the point of a twig. When a sufficient quantity of this varied vegetation has been selected, mastication is performed. No doubt this fastidious delicacy is more observable when the appetite of the animal has been already satisfied, and he is eating rather as a matter of habit than to satisfy the calls of hunger. Still it shows a trait of character which amuses and interests me much. I cannot help loving them for it.

Dry food the deer do not relish. Even corn they do not

relish, after they can get a supply of green vegetation, though they rarely refuse cake or bread. Timothy hay they dislike most of all, and can never be brought to eat the stalk; when severely pressed by hunger, they will only nip the heads and blades. Clover they manage better, especially the second crop or rowen. Hungarian hay they seem to enjoy, but their choice is the weeds among the hay, all of which they first select. In a severe winter corn or other grain is indispensable to keep them in good order. They do not fancy roots of any kind, and eat pumpkins sparingly. They are exceedingly fond of acorns, wild apples, and plums. So soon as the former begin to fall they commence to thrive, and in a few weeks get fat. Even hickory nuts are not too hard for them, though they do not make a clean sweep of them, as they do of the acorns.

Both the elk and the deer are as fond of salt as cattle and sheep, and should be salted as regularly. They are fond of clear, fresh spring water, of which they consume considerable quantities, and when that is not accessible, they will not reject an inferior article. In the winter many will eat snow as a substitute, rather than go half a mile to the spring. But water is not indispensable in the summer season with the deer at least. About the first of August last I purchased and put in the park a pet fawn. She seemed to be afraid of the other deer, with whom, at least for the first two months, she refused to associate, and delighted only in the society of human beings. She never wandered out of sight of the gate, and whenever that was opened by any person she would rush up in the greatest delight. The season was excessively dry, and there was no water nearer than three quarters of a mile, in the north park, to which the deer only had access through a small opening. She was never seen in the north park till March following, and I much doubt if she ever before that found the spring. I am very confident, that for two months, at least, she never tasted a drop of water, as there was not a shower of rain,

and I expressly forbade any being given her, at least till she should show some symptoms of the want of it, which she never did. During the winter there has been no water in the south park, and not one quarter of the deer have been in the habit of going into the north park.

The period of gestation of the elk is seven months, and of the deer five months.

A few observations upon the venison of these animals remain to be presented. The delicacy and fine flavor of the venison of the wild deer are familiar to all. A considerable modification in the flesh of those raised in the park is observed. The meat is not of so dark a color; it is more tender and juicy; the flavor is not so high, but more delicate. Several causes contribute to these results. The muscles are not rendered hard and tough by exercise, of which they take comparatively little. They are not harassed by constant apprehension of danger from their natural enemies, which keep the wild deer upon the lookout continually. These circumstances are sufficient to account in a large degree for the difference between the venison of the wild and partially domesticated deer. Again, they are not killed when in a state of high excitement and violent exercise, as is usually the case with the wild deer. The fact, also, that they are as thoroughly bled as a sheep or a bullock in the slaughter-house, contributes, no doubt, to the improvement of the venison. I am unable to compare, by personal observation, the venison of the elk raised in the park with that of the wild elk; but, from what I learn from others of the wild meat, I think the improvement must be much greater than in the case of other deer. The most striking peculiarity of the elk venison is its remarkable solidity and extraordinary nourishing properties. One's appetite is satisfied by eating less than half the amount which would suffice of beef or mutton. While it is remarkably firm and solid, it is tender and juicy, exceeding in this latter respect almost any other game meat. It has a flavor peculiarly its own,

and has been much admired by all who have tasted it at my table. The tallow of both the elk and the deer is very white and remarkably hard, — much more so than mutton tallow. It is not appreciably softened in a temperature of ninety or ninety-five degrees. In the properties stated it almost resembles white wax.

Both the deer and the elk are destitute of the gall-bladder.

XII.

THE WILD TURKEY AND ITS DOMESTICATION.

A PAPER PRINTED IN THE "AMERICAN NATURALIST" FOR JUNE, 1877.

I HAVE been well acquainted with the wild turkey (*Meleagris gallopavo*) of this country for over forty years, and have had good opportunities for studying it in its wild state, and for more than ten years past I have raised it in domestication, having had sometimes over ninety in my grounds at one time, and having raised more than sixty in a single year. Some observations on their habits and domestication may not be uninteresting.

My original stock was procured from eggs taken from the nest of the wild hen, in the woods, and raised under the common hen, and it has been twice replenished in the same way, on one occasion with seven individuals. The purity of the stock, therefore, cannot be questioned; but still more conclusive evidence was in the markings, so fully and accurately described by Audubon, Baird, and others. I know of no bird or animal where the markings are more constant or reliable than on the wild turkey; even to the number of bars on a given quill of the wing, for instance, which may be relied upon to identify it.

The young bird from the egg of the wild turkey, when brought up in close intimacy with the human family, becomes very tame, and when grown the males become vicious and attack children and even grown persons. I once had eight hatched out by a hen, and gave them in charge to the wife of a tenant, with stimulating promises if she raised them, which she did nicely. They were allowed to go into

the house, to fly upon the table, and to eat with the children. Until they were grown, any member of the family could go up to one and pick it up at any time, but they were afraid of strangers, and if anything excited their suspicion they would take wing and be off like a flock of quails.

At first I procured but a single pair of wild turkeys. The season they were a year old neither showed the least inclination to breed. The male was not heard to gobble, the wattles upon the neck did not turn red, and he was not observed to strut, as is usual with the male turkey in the breeding season. The next year he made up for all this, and the female also well repaid me for waiting. All the others I have had have bred freely when a year old.

I am now wintering the eleventh generation of the domesticated wild turkey, though the progenitors of a portion of my flock were introduced more recently. They generally occupy the south park, about forty acres in extent, mostly covered with second-growth trees of about twenty-five years' standing, with a considerable number of old oak-trees interspersed. In the park are ravines with good hiding-places. It is heavily set with blue-grass and some white clover.

The effect of domestication has been very marked. They have not deteriorated in size or in reproductive powers. They have always been healthy excepting in the summer of 1869, when they were afflicted with some disease from which about three quarters of the flock died. They have changed in form and in the length of the legs. The body is shorter and more robust, and its position is more horizontal; but most especially have they varied in color. These changes I have constantly watched. In the first and even the second generation but little change was observed. After that the tips of the tail feathers and of the tail coverts began to lose the soft, rich chestnut brown so conspicuous on the wild turkey of the woods, and to degenerate to a lighter shade; the beautiful, changeable purple tints on the neck and breast became marked with a greenish shade; the

bristles on the naked portions about the head became more sparse or altogether disappeared; the blue about the head and the purple of the wattles were replaced by the bright red observed on the tame turkey-cock; the beautiful pinkish-red of the legs became dull or changed to brown. The next year, or when the bird was in its second year's growth, say in the third generation, these marks of degeneration would on most of the specimens, especially of the cocks, disappear, and the plumage would show the thorough-bred wild turkey. Each succeeding generation shows these changes to be more pronounced, but each year as the bird gets older the shades of color of the wild parent become more distinct. The change of form keeps pace with the change of color, which is much more manifest on the hen than on the cock. I have hens now three or four years old with brown legs, though still showing the pink shade, and on whose feathers the white has very considerably replaced the cinnamon shades. In fact I have many specimens that would readily pass for the bronze domestic turkey, even in the view of an expert. I am satisfied that without a fresh infusion of wild blood, in the course of fifteen or twenty years more but few individuals would show the distinctive marks of the wild turkey to any considerable extent, and the whole would be pronounced the bronze domestic turkey. This change is much more manifest in some individuals than in others, still it is very marked in all. I have met with several farmers in the west who have domesticated the wild turkey, and whose experiences correspond with my own, but they are not writing men, though frequently pretty good observers. The truth is that those having the most facts on this particular subject do not appreciate their importance, and the observations they have made are never known to the scientists who are most capable of weighing and comparing them, and it is possible that these have fallen into errors for the want of full data.

The habits of the wild turkey are not as rapidly changed

by domestication as its form and coloring; still they undergo a change as well. The wild cock-turkey, by the time he is five months old, seeks a perch well up in the largest trees in his range, and as he grows older he is constantly inclined to seek a higher perch, till he is frequently found at the very apex of the tallest tree. The largest turkey I ever killed sat at the extreme top of a very tall tree, which enabled me to see him against the background of the clear eastern sky as the day was breaking, while all below was profound darkness, and so I had plenty of time to approach behind another large tree with the most deliberate caution to within range, and there I had to wait a considerable time before I could see the sights of the rifle. He was already alarmed and stood as straight as a penguin, which is the constant habit of the bird when his suspicions are awakened. Fearing he would leave I fired before I could tell whether his back or his breast was towards me. When a twenty-four pound turkey falls from so great a height, and thrashing through the branches of the tree strikes the ground with a great crash, it is music to the ear of him who can claim the prize. A companion once killed a very large cock on the top of a very large tree, under which we had made our camp fire, where he had sat for hours undisturbed by the noise and bustle of our camp. As we had approached the place without caution, — laughing, talking, and perhaps singing, — he knew he was undiscovered and not likely to be looked for there, and so felt no apprehension, and it was only by an accident that his presence was found out. These incidents tell us of the habits of the bird.

This disposition, especially of the cock, to seek a high perch is scarcely impaired by domestication in the second and third generations, but after that they seem less ambitious for high places, and it appears to grow less and less in succeeding generations, till they come down to about the level of the domestic turkey.

The wild and suspicious timidity so characteristic of the

wild turkey is eradicated very slowly. When back in the park foraging they seem suspicious even of the one who daily feeds them, and make off when they see him approaching; but upon their feeding grounds most of them come to pick up the corn even within a few feet of strangers. Let any cause of alarm, however, occur there, and they take fright at once. Those only two or three generations from the woods will take wing, while the others will run like race-horses. This wildness, however, diminishes with each succeeding generation.

The eggs of the wild turkey vary much in coloring and somewhat in form, but in general are so like those of the tame turkey that no one can select one from the other. The ground color is white, over which are scattered reddish-brown specks. These differ in shades of color but much more in numbers. I have seen some on which scarcely any specks could be detected, while others were profusely covered with specks, — all laid by the same hen in the same nest. The turkey eggs are more pointed than those of the goose or the barn-yard fowl, and are much smaller in proportion to the size of the bird.

When the wild turkey in the forest voluntarily leaves her nest, she always covers it with leaves sufficient to hide the eggs and all evidence of the nest. This is less carefully done by the first descendants of the wild hen, and each succeeding generation becomes more careless in this regard, till now more than half the nests we find are not covered at all, and none are covered with the care always manifest in the wild state.

This wildness seems the most constant with the hen in the breeding season. When the hens are about to commence laying they seem to relapse to their native wildness and seek the seclusion of the north and east parks, or if their wings are not clipped they may escape from the park to the neighboring forest and there rear their young. After these get as large as quails, or perhaps larger, they generally

bring them home, or with a little care they may be driven home. Although the young birds are as wild as possible at first, after they have tasted corn a few times and find it is furnished by a man on foot or from a buggy, they lose all fear and become importuuate, while the mother hen may still hang back suspiciously. I have often, when driving through the park, had the half-grown birds fly into the covered rockaway for corn, for they soon learned there was always corn there for them.

The cocks after a few generations never get as wild as the hens do at the breeding season, but stay contentedly in the south park, and nearly always keep together. They may amount to fifteen or twenty in number. If the nest of a hen is broken up she immediately seeks the cocks and then returns to seclusion, and generally she will even make a third nest if the second is destroyed. I have never seen the cocks fight for the hens, although there may be a dozen of them of equal age and size. These seem to have no leader and to have no master, and rarely have disputes except when being fed. Then one is very apt to make a pass at another, which is most likely returned, when two or three others will join in the fray, appearing quite indifferent as to which they hit. After a fracas of two or three minutes they all seem to remember that it is supper time, but on looking about they discover that the hens and the youngsters have taken it all. Whenever the new broods are brought home in the fall they are attacked by the home flock, — the old cocks, the barren hens, and the young ones, which have been initiated through similar tribulations. The mother hen is treated as a stranger just as much as if she had never been there before. A single day, however, is sufficient to establish friendly relations, when the newcomers are admitted to the family circle on cordial terms.

I have never noticed any disposition of the old cocks to interfere with a setting hen, or her nest, or her young brood, only when a half-grown flock comes home they are simply treated as strangers, as already stated.

The pinion of a wing has been removed from many of the old hens, and if the latter are kept in the south park where the cocks run, and which is really the home of all, they nest there, frequently making the nest by a slight excavation in the open grass-plot, away from any protecting object, and one is astonished at the difficulty of finding the hen setting there, although the place be described. Experience has proved that I do not get nearly as many young from those who are obliged to nest in the south park as from those which retire to complete seclusion and are never seen or heard of, except by chance, till their chicks are as large as quails.

My observations accord with those of Audubon as to the friendly relations existing between the brood hen-turkeys. It is not uncommon for two or three hens to lay in the same nest, and then set upon the eggs and raise the young together, though this I always look upon as a misfortune, for most likely they will not commence laying together, so that after one commences setting the other will keep on laying for a week or two before she begins. As neither will remain a day after the first chick is hatched, of course all the late-laid eggs are lost, unless they are taken out and put under a hen, when they generally hatch out, although they may may have lain a day in the nest after they were deserted, but only if the weather is warm. The hen is often a very pertinacious setter, remaining upon the nest a week or more after all the eggs have been removed. I once found a hen setting upon an empty nest on a declivity of a ravine, and found the eggs scattered about, some very near the foot of the hill, and quite cold, — the mischief of a peacock. Those not broken were returned to the nest. When approached the hen ran away, but soon returned to the nest and hatched out every one of the eggs and raised the birds. The hen, so far as I have observed, never remains upon the nest longer than the morning after the first bird is hatched, though there may be no more than one bird

out, leaving all the remaining eggs to their fate. When a day old the chick can follow the hen, though it may tumble down on every foot of the ground it runs over. When two or three days old it will follow the hen with astonishing vigor, and will trail through the grass in a cold rain storm without injury, when similar exposure would have been fatal to the domestic turkey. I have had repeated opportunities to test this, and I do not believe that I ever lost a young bird by reason of its getting wet. Even the hybrids,[1] when but a few days old, are capable of enduring exposure from which we should despair of the domestic bird.

When two young broods meet in the woods, neither hen will show hostility to the young of the other, and they will generally separate after a little social intercourse; but sometimes they will combine their broods, and ever after range together, when each hen will take the same care of all as she did of her own. I have often seen three hens thus together leading around a large flock of young birds, the three broods being manifestly of unequal ages as they were of sizes.

The flesh of the young wild turkey is as white as that of the tame turkey till mid-winter. After that it begins to show a darker shade, and when a year old the change of color is very appreciable, and this darker shade deepens till the bird is several years old. All of this is entirely lost by domestication. I have never killed a bird from an egg taken from the wild hen's nest in the woods, for I could not afford to do this, but I have had on my table many of the next generation, all the way from eight months to two or three years old, raised in my grounds. In every instance the flesh was as white as that of the domestic turkey. The change of food and the less active habits produce this change of color of the flesh of the wild turkey.

Turkeys consume more herbaceous food than is generally supposed. In the spring, when fresh vegetation shoots

[1] I use this term not in its strict sense, but for convenience.

forth, they subsist almost entirely upon it, showing less anxiety for corn than at any other season. Blue-grass and clover they seem to prefer, and on these they graze almost as freely as the geese. Later, when insects appear, they manifest their carnivorous appetite and become constant and diligent foragers for them. They are not scavengers like the barn-yard fowl, but much prefer, if they do not confine themselves to, living animals. Still they by no means limit their selection to insects. I once saw a half-grown turkey acting very strangely, and stopped a little way off to notice his actions. I soon observed that he was in conflict with a snake about ten inches long. He would pick it up and throw it, and again seize it as soon as it struck the ground. At length, after the snake seemed pretty well disabled, he seized it by the head and began to swallow it. The part of the snake yet in sight thrashed vigorously around, sometimes winding itself around the head and neck of the bird. This was too much for the turkey, and he threw it up and went at it again to make it more quiet, and then another attempt was made to swallow it; but it was not till the third effort was made that success was achieved, and then the process occupied several minutes, the tail of the snake being all the time active till it finally disappeared.

This magnificent game bird was never a native of the Pacific coast. I have at various times sent in all about forty to California, in the hope that it might be acclimatized in the forests. Their numerous enemies have thus far prevented success in this direction, but they have done reasonably well in domestication, and Captain Rodgers, of the United States Coast Survey, has met with remarkable success in hybridizing them with the domestic bronze turkey. Last spring I sent some, which were placed on Santa Clara Island, off Santa Barbara. They remained contentedly about the ranch building, and, as I am informed, raised three broods of young, which are doing well. As

there is nothing on the island more dangerous to them than a very small species of fox, we may well hope that they will, in a few years, stock the whole island, which is many miles in extent. As the island is uninhabited except by the shepherds who tend the immense flocks of sheep there, they will soon revert to the wild state, when I have no doubt they will resume markings as constant as is observed in the wild bird here; but I shall be disappointed if the changed condition of life does not produce a change of color, or in the shades of color, which would induce one unacquainted with their history to pronounce them specifically different from their wild ancestors here. Results will be watched with interest.

My experiments in crossing the wild with the tame have been eminently successful. These have been conducted at my farm in the country. I first sent up a cock and turned him out with a few domestic hens. They all raised good broods. The hybrids grew larger than either parent. The next year the hybrid hens, as the breeding time approached, manifested the wild disposition of their wild ancestor, but they had an artificial grove of ten acres a little distance from the buildings, which was set with a thick undergrowth, and here they nested. When they brought off the young broods, instead of keeping about the barns as their tame mothers did, they wandered off through the fields where they found an abundance of insects. There was no forest nearer than two miles, so I think none of them found their way to that. Some of them returned to the grove to roost at night, while others remained away. Pains were taken when they were met with in the fields to drive them to the barn and feed them with corn. This rarely had to be repeated, for they would come up themselves for their suppers. Some wandered away and never returned, but were afterwards recognized about the yards of neighbors perhaps miles away; in subsequent years they were much more easily kept in hand and probably few were lost, till now

after seven years there is little trouble to keep them about the place at night, although they wander off through the fields for a mile or more during the day, but they always get a ration of corn about sunset. Last fall the flock counted one hundred and ten, and was the finest I ever saw together. I have had turkeys on my table the past winter not eight months old that weighed seventeen pounds dressed, though some of the young hens did not exceed nine pounds. I have sent to the farm several thorough-bred cocks at different times, but as they were from my domesticated stock they did not seem to add much to the wildness of the birds.

My experiments establish, first, that the wild turkey may be domesticated and that each succeeding generation bred in domestication loses something of the wild disposition of its ancestors. Second, that the wild turkey bred in domestication changes its form and the color of its plumage and of its legs, each succeeding generation degenerating more and more from those brilliant colors which are so constant on the wild turkey of the forest, so that it is simply a question of time — and, indeed, a very short time — when they will lose all of their native wildness and become clothed in all the varied colors of the common domestic turkey; in fact be like our domestic turkey, — yes, be our domestic turkey. Third, that the wild turkey and the domestic turkey as freely interbreed as either does with its own variety, showing not the least sexual aversion always observed between animals of different species of the same genus, and that the hybrid progeny is as vigorous, as robust, and fertile, as was either parent.

It must be already apparent that I, at least, have no doubt that our common domestic turkey is a direct descendant of the wild turkey of our forests, and that therefore there is no specific difference between them. If such marked changes in the wild turkey occur by only ten years of domestication, all directly tending to the form, habits,

and colorings of the domestic turkey, — in all things which distinguish the domestic from the wild turkey, — what might we not expect from fifty or a hundred years of domestication? I know that the best ornithological authority at the present time declares them to be of a different species, but I submit that this is a question which should be reconsidered in the light of indisputable facts which were not admitted or established at the time such decision was made.

There has always been diffused among the domestic turkeys of the frontiers more or less of the blood of the wild turkey of the neighboring forests, and as the wild turkey has been driven back by the settlement of the country, the domestic turkey has gradually lost the markings which told of the presence of the wild, though judicious breeding has preserved and rendered more or less constant some of this evidence in what is called the domestic bronze turkey; and the more these evidences are preserved in the bronze turkey, as the red leg, and the tawny shade dashed upon the white terminals of the tail feathers and the tail coverts, the better should the stock be considered, because it is the more like its wild ancestor.

That the domestic turkey in its neighborhood may be descended from or largely interbred with the wild turkey of New Mexico, which in its wild state more resembles the common domestic turkey than our wild turkey does, may unquestionably be true, and it may be also true that the wild turkey there has a large infusion of the tame blood, for it is well known that not only our domestic turkey, but even our barn-yard fowls, relapse to the wild state in a single generation when they are reared in the woods and entirely away from the influence of man, gradually assuming uniform and constant colorings. But I will not discuss the question whether the Mexican wild turkey is of a different species from ours or merely a variety of the same species, only with differences in color which have arisen from accidental causes, — and certainly I will not question that the

Mexican turkey is the parent of many domestic turkeys; but I cannot resist the conclusion that our wild turkey is the progenitor of our domestic turkey. Indeed, we know that this is so to a very large extent, from their constant interbreeding along our frontiers, and I never heard of any one who had wild blood in his flock who did not think he had as good domestic turkeys as any one else.

XIII.

SOME POINTS CONNECTED WITH THE VITAL STATISTICS OF THE HAWAIIAN ISLANDS.

A LETTER TO THE CHICAGO "MEDICAL JOURNAL AND EXAMINER."

HONOLULU, Hawaiian Islands, *February* 16, 1878.

THE interesting observations which I have been enabled to make in these Islands have supplied me with some vital statistics which may prove of interest. My attention was first attracted to the subject by listening to a septennial sermon preached by Rev. Mr. Freer, pastor of the Fort Street Congregational Church in Honolulu, on the last Sunday of 1877. He stated that during the seven years in which he had the charge of that church, there had been born to its members eighty children, and that of those under his charge, five under fifteen years of age had died of disease and one from accident, and that during the same time fourteen adult members of the church had died.

These statistics were not sufficiently full to satisfy me, so I took an early opportunity to call upon the reverend gentleman, and told him that his discourse had awakened an interest in me which it did not satisfy, and that he would lay me under great obligations if he could inform me what was the average number, during the seven years, of the children under fifteen years of age of whom but five had died of disease, and what was the average number of adult members of his church, of whom fourteen had died in the same period, and also how many of the eighty children born during that time were still living. He expressed great willing-

ness to do this as soon as he could make the necessary investigation, and when he had done so he obligingly informed me that the average number, for the seven years, of the children from whom the five were taken, was three hundred. That the average number of the adult members of the church during the seven years, of whom the fourteen had died, was two hundred. That three of the five children who had died were of the eighty born during that time, leaving seventy-seven of them still living. He then added that no death had occurred during his time, among either class, of a person between the ages of six and eighteen years, so that the number of juveniles might have been largely increased by including all in that class under eighteen years of age. I remarked that I thought his statements most extraordinary, as I had seen it stated by high authority that one half of the children born in the United States and in Europe die before they attain the age of five years. I asked him if he had ever applied figures to his facts so as to enable him to comprehend the results more clearly. He said he never had, for it had never occurred to him to do so. I then said, let us assume that the three hundred children represented three hundred years of life each year, then during the seven years there were represented twenty-one hundred years of juvenile life; and if we divide this number by five, the number of deaths from disease, which has occurred among them during that time, then there has less than one death occurred for four hundred years of juvenile life in his congregation; and by applying the same mode of computation to the adults of his church and the fatality among them during the same time, then there had occurred one death for each one hundred years of adult life.

He admitted that these results seemed very extraordinary, but that could not change the facts. At the first opportunity I laid these statements before Dr. McGrew, a physician of very extensive practice in Honolulu, who said that he did not doubt the truth of the statements, and that he did

not think the results exceptional among the white population in the Islands. That the congregation of the Fort Street Church consisted of white people with very few exceptions, and that the few natives who worshiped in that church were of an exceptional class. That while the death of a white child in the Islands was of very rare occurrence, the very reverse was the case among the native population. I asked the doctor how he explained the remarkable difference in the health of the children in the two races. He ascribed the difference to two principal causes: first, the lack of constitutional vigor or vitality in the native children, or inherited weakness or disease; and second, a lack of that care which the white children receive, or in other words a lack of maternal affection. He stated that all children here are subject to those juvenile diseases which afflict children in other countries, such as the whooping-cough, measles, and the like; but that here they are of a much milder type than in any other country of which he had any knowledge, and when proper care was taken of the patients, they very rarely proved fatal. That indeed the death of a white child was of very rare occurrence, so that parents become, at least, partially divested of that deep solicitude or rather apprehension which is felt in other countries, that the new-born infant may not live to maturity. I then inquired if he could discover that this immunity seemed to have a tendency to beget in the white mothers an inclination to neglect their children. He very promptly answered, not in the least; that the white mothers here are as devoted to their offspring as in any country in the world, only that they were more richly rewarded here for such affectionate care than elsewhere.

While upon the Islands I have neglected no opportunity to push my inquiries on this interesting subject, and found the results nowhere less favorable than the first statements given. In a conversation with Dr. Endor, formerly of St. Louis, now a practicing physician at Wailuku on the Island

of Maui, I learned that by applying the same mode of computation first adopted to his facts, there were six hundred years of juvenile life to each death of a child among the white population within his practice, while his observations corresponded with those of Dr. McGrew as to the native population.

Rev. S. C. Damon, seamen's chaplain at Honolulu for many years, whose hand seems to be in every good work, took me to visit the Punahou school and Oahu college which is situated just beyond the city. From an historical essay, read at a meeting of the alumni of this institution by Hon. A. F. Judd, in 1866, I learn that "the school opened on the 11th of July, 1841, with an attendance of thirty-four pupils, solely the children of missionaries." "The greatest number (of pupils) in any one year was in 1858, when there were seventy-seven. In 1861 there were seventy-six, and in the year just closed (1865), fifty-one. Total number of pupils during twenty-five years, two hundred and ninety; number of deaths so far as known, twenty; leaving alumni alive two hundred and seventy." I was informed that a large percentage of these deaths occurred out of the Islands. At the time of my visit the school had been in operation over thirty-six years, and not a single death had ever occurred among the pupils. I could not obtain the exact average attendance, but Dr. Damon expressed the opinion that the average would be about seventy. While the data obtained lacks precision in some important particulars, as, for instance, the number of deaths of the alumni which occurred on the Islands, and the average number of pupils in the school, still they are valuable as tending to show the healthfulness of the Islands.

I have made some efforts to get a biological history of all the missionary families in these islands, but without success. This, complete, would form a most interesting chapter in natural history, and such a work I believe not impracticable at this day. It would show a measure of generation and

health, and periods of vitality, rarely to be paralleled in the history of the human family. I have a publication which advances a step in this direction. The missionary mothers in the Islands formed themselves into a society which they called the "Maternal Association of the Sandwich Islands," and in 1854 published a list of the members and children of the association, called the "Blue Book." In this the dates of the births of the children and the dates and the places of the deaths of members and children are given. In this book are given sixty-five missionary mothers and their children, of whom there were born two hundred and eighty-eight. Thirty-two of these had died in the Islands of disease, one was drowned, and five had died at other places, one of whom was drowned. Of the sixty-five matrons, nine had died in the Islands, and two at other places. The first child was born in October, 1820, and the last in March, 1854. The value of these figures is better appreciated when we remember that the first missionaries arrived here in 1818, so that the period embraced in the statistics was thirty-six years. I regret that I have not the means of determining the numbers and dates of the arrivals of the reinforcements; but as the dates of the births of the children are given, together with the dates and places of the deaths among them, we are enabled from these to make valuable computations. As we have seen, the sixty-five mothers bore two hundred and eighty-eight children, of whom thirty-eight had died. Reckoning from the birth of each child up to 1854, the time when the statement was made, the aggregate years of life, if none had died, was four thousand one hundred; computing, then, the time of each death up to 1854, the aggregate is found to be four hundred and sixty-three years, which, if deducted from the four thousand one hundred years, leaves three thousand six hundred and thirty-seven years of life. With these data given, each one may make his own computation, though I cannot help observing that more than eighty-six per cent. of those children born

in the Islands were living at the end of the period of thirty-four years after the first was born. The medical profession may be familiar with such results, but I confess they surprised me. I may state here that I learned from accoucheurs and other reliable sources that parturition is much easier and safer here than is usual in other countries, and that even a few months' residence on the Islands seemed to prepare the system for such results.

While enjoying the hospitality of Father Alexander at Wailuku, and before I had seen the "Blue Book," I expressed a desire to obtain a biological history of the missionary families of the Islands, when he remarked that there might be some difficulty in getting the history of all, but he could readily give the history of one: that he and his wife came from Kentucky to the Islands as missionaries in 1832. That they had had nine children, nineteen grandchildren, and six sons and daughters-in-law, and that there had never been a death in the family, but all were now living on the Islands; "and," said he, as he straightened himself up, a just pride beaming from every lineament of his countenance, "not a black sheep among them all." The venerable heads of that remarkable family still manifest the elasticity and vigor of middle life, and labor with unabated zeal in the cause to which they at the beginning consecrated their lives. Truly they have been conspicuously blessed.

The departments of the government kindly furnished me with all the statistical information in their offices, but I find nothing which answers the inquiries for vital statistics which I am making. The rapid diminution of the native population, which has long been known the world over, and has been often the subject of elaborate dissertations, had not led me to expect here the most favorable conditions for human life to be found in any country of which I have any knowledge. It is not only remarkable as a sanitarium for children, but for adults as well. The aged missionaries who have been laboring here for forty or fifty years or more, I

find still strong and vigorous, working zealously in their missions, with a promise still of many years of usefulness, notwithstanding the hardships and privations through which they have passed.

Let me add that the last census shows, for the first time, an increase of births over deaths of the native population in Honolulu; but I fear the hopes which this statement inspired, that a turning point had been reached in the vitality of the native population of these Islands, will prove illusory, and that they are at last destined to fade away and disappear.

Judge Caton's letter called out a communication in a subsequent number of the "Journal and Examiner" from Dr. Henry Lyman, a son of one of the Missionaries in the Sandwich Islands, where he was born and brought up. As an interesting contribution to the same subject, Dr. Lyman's paper is appended here.

CAUSES OF THE LOW RATE OF MORTALITY AMONG THE FOREIGN RESIDENTS AT THE HAWAIIAN ISLANDS.

By Henry M. Lyman, M. D.,

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The remarkable paper by Judge Caton in the June number of the "Journal and Examiner" regarding the low rate of mortality which obtains among the foreign inhabitants of the Hawaiian Islands, while the native inhabitants are rapidly diminishing in number under the influence of epidemic diseases and the untoward circumstances of a sudden change from the savage state to comparative civilization, affords interesting evidence in corroboration of the doctrines enunciated by Herbert Spencer in his "Principles of Biology." Spencer shows that the natural tendency of things is in the direction of an equilibrium of forces. Every organized body is the result of an equilibrium between internal forces and external forces. Every living body is the result of the establishment and preservation of an equilibrium between its internal vital forces and the external, incident forces of nature, which tend to disintegrate every existing form. Now, when the incident forces, whether physical, spiritual, or both — it makes no difference which — are numer-

ous and complicated, a corresponding multiplicity and complexity of the internal vital adjustments will be necessary, in order to effect the preservation of a living equilibrium. The result will be a highly organized and enduring structure. This is precisely the result which experience discovers. In the temperate zones of the earth the number and complexity of the conditions of existence are greatest. It is here that the greatest changes and varieties of temperature and climate are experienced. It is here that, consequently, the greatest variety of occupation and mode of life is possible, so that it is in precisely this portion of the earth that we find that complexity and perfection of physical structure, *growing out* of perfect equilibrium of forces, which gives special toughness and power of endurance to that portion of the human species which inhabits the favored zone.

There is, however, another consequence of the natural tendencies toward equilibrium which is not so conspicuous, and is, therefore, often overlooked by medical writers. When the incident forces have operated with great uniformity for a succession of generations upon a given race of beings, there becomes established such a perfection of equilibrium between vital forces on the one hand and the antagonistic forces on the other, that a new element of danger is evolved. Exposed to a uniform succession of similar incidences, the living organism becomes exceedingly strong in its power of resisting the impact of that particular group of forces ; but, experiencing no need of adjustment against other kinds of incident force, it becomes less and less complex in its structure, and correspondingly less capable of resisting the shock of new and unexpected modes of motion. This lower form of organization is found in those regions where the conditions of life are characterized by great uniformity. It is reduced to its lowest terms of simplicity, and consequent lack of adaptability to various and sudden changes, in those parts of the earth where the temperature, climate, and mode of life are the most uniform, and where the species is most isolated. These are the conditions which have made the Pacific Islanders what they are ; hence their inferior power of resistance when exposed to new influences that are opposed to life.

Such is the Spencerian mode of stating the case. Philosophy aside, we recognize the same facts every day, and much of our practice is based upon a semi-conscious recognition of these facts. Take, for example, a family of young children among the wealthier classes in society. Surround them with every luxury, in a winter-palace, with a constant temperature of 72° F., and they will for a time enjoy excellent health. They are like a tribe of Polynesians shut up on a little island in the middle of the Pacific. But the little things, though they never have measles or scarlet fever, or any other horrid infectious disease, become

surprisingly delicate and tender. A little too much dinner makes them yell with colic; a new tooth produces violent convulsions; and a ride in the open air would fairly snuffle them out of existence. They have become thoroughly equilibrated with a certain limited number of incident forces; and this perfection of adjustment to those narrow conditions leaves them preternaturally sensitive to every novel influence. They may be likened to a fortification in which all the labor has been concentrated upon the sea-ward side — it is impregnable against a naval attack, but wholly defenseless against an approach from the land.

Now when we desire to "harden" a delicate child, we proceed to expose him to the greatest possible variety of conditions — incident forces, as Spencer calls them. We turn him out-of-doors every day; we take off some of his extra wraps; we bathe him with cool water; we make him practice all kinds of games; we get him vaccinated; we let him run the risk of infection, and are glad when he has done with the measles and scarlet-fever and whooping-cough; we do not fear the changes of season, but rather welcome them as agents in the great process of building a man. If the little fellow can't stand the operation, sensible people leave to sentimentalists the task of weeping over the unhappy "victim" of exposure, and renew the experiment with the next subject which opportunity affords. It is by precisely such processes of natural selection that the earth has become peopled with just such races as now exist. When the conditions which have produced such results are anywhere suddenly modified, definite results may always be expected. If the simple mode of life of a Polynesian tribe be suddenly changed in the direction of greater complexity, it will inevitably cause a fearful mortality from diseases against which their section of the human species has never had occasion to adjust itself. But if a portion of a highly organized race, like the Anglo-Saxon, for example, be transplanted to a region where the conditions of life are less complex, but not too far removed from those to which it has always been accustomed, the first consequence will be greater immunity from disease and a diminished mortality. This is owing to the hereditary transmission of the ancestral complexity of structure, which for a time preserves those adjustments of the organism by which it is enabled to contend successfully against adverse forces. In time, however, the universal tendency to perfect equilibrium between internal and external forces will assert itself, and the descendants of the most highly organized races, especially if shut out from intermarriage and intercourse with more favored branches of the parent stock, will sink to the level of the inferior variety. The bearing of all this upon the course of epidemic disease in any given community is obvious. Exclude measles, for example, from an island for a century or more. A race of men is produced whose phys-

ical organization has never been disturbed by the impact of the causes of measles. The consequence is a structure wholly out of equilibrium with such a force, and exceedingly sensitive to influence. Now introduce the disease into such a community, and it will spread like wild-fire, with a terrible severity and great mortality. Witness the epidemics of measles at the Faroe Islands and at the Sandwich Islands. At length, however, the organization of the race adjusts itself to the new force; it is no longer sensitive; the epidemic "dies out," and if soon reintroduced its lack of fatality is like that observed where the disease is always endemic. We see the same thing illustrated by the course of scarlet-fever in our own communities. This is, also, the reason why the first outbreak of an epidemic, like cholera, is attended with the rate of morality which steadily diminishes with the progress of the pestilence. These considerations, also, explain the futility of all those efforts at stamping out disease which are based simply upon non-intercourse. Disinfection, and such processes as vaccination, afford the only methods which afford a reasonable hope of limiting the ravages of communicable disease.

XIV.

THE VOLCANOES OF THE HAWAIIAN ISLANDS.

NOTES OF TRAVEL, 1878.

We have now been in the Hawaiian Islands about two months, and have visited the most prominent objects of interest here. For the present I shall confine myself to the volcanoes, in comparison with which all others are mere camp-fires. There are now but two active volcanoes in the group, both of which are on the island of Hawaii, which is the most easterly, and contains more territory than all the others put together. All the islands are of volcanic origin, showing everywhere extinct craters, and lava flows in different degrees of decomposition. It is plain to be seen that the oldest or first formed island was Kauai, the most westerly of the group, and the first discovered by Captain Cook, just one hundred years ago. The next formed was the next to the east, and so on in succession to the most easterly, — Hawaii, — which alone is still in the process of formation and enlargement by successive outflows of lava from its active volcanoes.

But let us examine first an extinct volcano, the greatest now to be found on the face of the globe, of so recent a date as to leave every feature as well marked and defined as it was the day after its fires ceased to burn. As you look upon it you still think you see gases and flame issuing from its many cones, and are hardly persuaded it is safe to ramble among its red ashes and over its recent lava flood. This is the crater Halakala, which, being interpreted,

means House of the Sun. It must have received its name from those residing on its western base, to whom the sun appeared to rise directly out of its bed. This crater is two thousand feet deep, and seven miles in its longest diameter. Its cone covers most of East Maui, with a base of twenty miles in diameter, and an altitude of more than ten thousand feet. Its southeast side seems paved with recent lava flows, which extended to the sea. That its period of activity was very recent is manifest upon inspection, yet I was unable to learn that the natives have any tradition of its activity. I may, however, record one fact, which I believe has never been in print, and yet the proof of which is so conclusive as to admit of no dispute or question, and that is that this volcano was in active eruption during the residence of man upon the island with habits and industries like those of the present day. When the islands were discovered — and the same custom still prevails — fish-ponds were formed in favorable locations, by inclosing, with substantial stone walls, shallow portions of the waters protected by bays or reefs. The traveler now sees these frequently as he passes along the coast. Father Alexander, now residing at Wailuku, on Maui, whose hospitality I enjoyed while visiting that island, informed me that he once found on the east side of the island a wall laid up by human hands, and precisely like the fish-pond walls of the present day, partially overflowed, and cemented together with a lava flow which had evidently filled up the pond and encroached upon the outer or inclosing wall. My informant came here with his family as a missionary forty-six years ago, and has spent a most laborious and useful life among the natives. He is a man of education, of talent, of great vigor and energy, and close observation, and his statement would no more be doubted among those who know him than would one found in the Acts of the Apostles. Here is one tangible point, at least, connected with our subject, and as it seems to me, one of great interest, though, as we shall

presently see, another volcano has become practically extinct on a neighboring island within the present century.

On the 8th of January, 1878, at five P. M., we went on board the inter-island steamer Like-Like, then in the harbor of Honolulu. She was a fine new vessel of six hundred tons, owned and managed by S. G. Weldon, a Kane County boy, who left Geneva more than twenty-five years ago, and has for many years been a prominent citizen of this kingdom. He is one of the nobles who constitute the upper house of the parliament or legislature. Here noblemen do not hesitate to work and attend to business, and right well do they do it. The weather was serene, the evening beautiful, and we passed out of the harbor and beyond Diamond Head into the open channel before we could fairly feel the motion. These inter-island channels, like the British and Irish channels, have rather a bad reputation among those who are liable to suffer from seasickness. The channel was exceptionally quiet, although most green ones would have been in the throes of the malady in five minutes. We were so well hardened that we felt no inconvenience from it, and enjoyed the company of friends under the awning. At night we lay down on mattresses on the deck and slept till four the next morning, when we were aroused by the call for Maalia Bay. We were soon on our feet and shook ourselves, which was all the toilet the occasion required or circumstances admitted. I had dreaded this landing, for it has to be done in the open boat, and, in a south wind particularly, is unprotected and very rough. As in Norway, so in these islands, except at Honolulu, the steamer anchors some distance from the shore, and both passengers and freight must land and go on board in open boats. However, I must say that the Kanakas, of which the crew consisted, are more expert, especially in a high surf, than any other men I have ever seen. Fortunately there was no wind, and there was as little sea as is compatible with the dignity of the old Pacific. So soon as the boat was lowered and the steps

down, we got into it as best we could, with our *impedimenta*, and, with a dozen others, were on the way to the shore more than half a mile away. There was no moon, and so it was pretty dark when we brought up along-side of a dock more than four feet above the water and about six feet wide. I inquired if there were no steps, and was answered, none. How were the ladies to get upon the dock? The answer was that they must watch a chance when the boat rose on a swell, and then climb quickly! Actions and not words were in request, and so it was done with the aid of all the gentlemen who could get hold to push or pull; and we walked up to the little store-house, the only building in the place. As soon as the ladies were seated on anything that could be found in the dark, we went back for our *traps*, which had been tumbled upon the dock quite as promiscuously as the passengers had landed, and in the mean time another boat had arrived with freight which had been added to the pile. Here was a pretty mess in a dark night; a dozen men looking for their packages, and a dozen Kanakas shouting and screaming in a language which sounds to the uneducated ear more like a flutter-wheel than anything human. The little dock was now piled full, and it required strength as well as agility to make progress in that heap. By the help of the former alone, I think, I soon got my goods together, with the lady to watch them, when I broke out into the darkness to look for a conveyance. There were half a dozen express wagons there, as they are called, like a double-seated democrat wagon with a fixed top, and really very comfortable conveyances. I struck upon young Cummins, a half-caste, and soon made a reasonable bargain with him, and we were quickly seated in the back seat of the express, while two gentlemen occupied a seat with the driver, and the baggage was put in an open vehicle driven by the lad's father, who was still soliciting custom when we started away to Wailuku, seven miles away, on the other side of the peninsula. The road was rough and our

progress slow. In half an hour day was breaking in the east, and in due time we saw the sun come up out of the ocean when we could survey the interesting surroundings.

The island consists of East and West Maui, both of which are composed of volcanic mountains. They are separated by a low isthmus seven miles across, the land gradually rising either way from a central depression. They tell of a sea-captain, who in the night saw the two high peninsulas, and supposing them to be two islands, attempted to sail between them, but could not do it, and in disgust left his ship among the breakers. The road skirts along within a mile of the foot of the mountain on West Maui, and we found ourselves riding in the midst of cane-fields of most luxuriant promise. But the great interest was in East Maui, for there stood before us Halakala, whose nearest summit was twenty-five miles away, and whose base seemed to occupy the whole peninsula. It looked like an Indian's bow with the string for a base, so regular was the outline, only near the top it had a serrated appearance caused by the broken, ragged edge of the crater itself. By half past six o'clock we brought up at the hospitable door of Father Alexander, who was expecting us, and was already standing on the veranda (nearly all good houses on these islands are partially or entirely surrounded by verandas to each story) to welcome us, and his welcome was most cordial. We had hardly got into the veranda, before Charley Dickey (the judge's youngest son) came dashing down the stairs, and joined in the welcome. He had come down from Haiku two days before to meet us and take us to his house there. He had overslept, and was only awakened by our arrival; it was evident that he had made a very hasty toilet, and we had made none at all; for all that our meeting was none the less joyous and gladsome. Mrs. Alexander's welcome was no whit less cordial than that of the others.

There are no hotels in these islands, except in Honolulu, and I have heard of but three other places where there are

boarding-houses at which you can pay for your entertainment. Hence, from the beginning, and until lately, the missionaries have entertained all comers without compensation, which must have been a heavy burden with their very limited stipend. The lack of accommodation for which they can make compensation is a sore embarrassment to many, and in some instances has prevented people from traveling in the Islands.

After dinner we mounted horses, and, led by Father Alexander, visited the Iao, or, as it is sometimes called, the Wailuku valley. It is a narrow cañon averaging perhaps one hundred and fifty yards in width, down which a considerable stream impetuously rushes. We passed up the valley for about two miles amidst a wonderful wealth of flowering shrubs, among the most conspicuous of which was the lantana, which formed impenetrable thickets twenty feet high, with stalks or stems three inches in diameter. Trees six inches in diameter, covered with castor-beans, were very common ; I brought some of the beans away with me. At the end of perhaps two miles, and when the valley had become considerably contracted, we left it and took a trail to the right and ascended several hundred feet, by very hard climbing, to a table-land, which affords one of the finest views I have ever beheld. It was not extensive, but wonderfully beautiful. On either hand lateral valleys came in, and on all hands were vertical walls, and sharp, needle-like cones, from three thousand to four thousand feet high, and all covered with a rich verdure of every imaginable shade of green. These walls were not smooth, but deeply scarred into sharp ridges and deep recesses, and how it was possible for vegetation to maintain itself, or subsist on a rock so nearly vertical, it was difficult to understand. The field-glass showed that the vegetation was mostly ferns, shrubbery, and vines, with some mosses, though in some of the deep recesses trees of considerable size could be seen. In a few places only was the naked rock revealed, which

gave the whole the appearance of patchwork, or rents, or dark gray patches in a great green carpet suspended between earth and heaven. No lover of nature could fail to be enchanted with this novel and beautiful scene. It differs in many features from anything I have elsewhere observed, and is really more enchanting than anything I have ever seen in the mountains of Switzerland, and I have heard the same remark made by a most appreciative traveler who has climbed almost every accessible crag in those grand old mountains.

The next morning we started for Haiku, fifteen miles distant. After passing around the head of the bay, the road leaves the immediate shore of the sea, and passes upon higher ground. The day was beautiful, the air fresh and invigorating, and the sight of the sea, with its long lines of breakers ever foaming over the coral reefs, was most enchanting.

Just before reaching Haiku we passed the deepest gulch we had yet seen in these Islands, and, although a very good road is cut into the sides of the cliff, we thought it better to walk down. We arrived at our friend's home in good time, and were received with great cordiality. On the 14th of January, at one P. M., we started to visit Halakala, and reached Olinda, Mr. S. Alexander's mountain home, in good time. Three miles back the carriage road ceased. All mounted horses, and fairly commenced the climb, though still much of the way the grade was not heavy. Olinda I found to be 8,980 feet above the sea. It is certainly a beautiful place, and the centre of a very extensive sheep ranch, which extends, in fact, to the very top of the mountain, though, to tell the truth, there is little to invite the shepherd or his flock so far up. From Olinda we looked down upon the intervening eight miles to the sea, and were charmed with the view. The great feature of the land view is the great number of sugar-cane fields which dot the surface of the earth as high as two thousand feet or more in altitude.

Clark's High School, which is at the end of the carriage road, and the numerous sugar-houses, with their high, white-washed smoke-stacks and cottages all around, are very beautiful as one looks down upon the whole as if upon a map. This house is only for a summer residence, and is not ordinarily occupied in the winter; but when we saw the bright flowers in the garden, and indeed all around us, it seemed like a misnomer to call it winter. Mr. Alexander had sent a cook with provision and servants up in the morning, so that dinner was commenced soon after our arrival, and ample justice we did it.

Soon after eight o'clock the next morning we were all in our saddles and bound for the great crater. As Mr. and Mrs. W. had to return to Haiku that night, while we, with Mr. Dickey and his sister, Mrs. Wallace, were to camp on the top that night, Mr. Alexander led them away at a rapid pace, while we proceeded more leisurely. The distance is computed at eight miles from Olinda, and the altitude to be made in that distance is six thousand feet, making a pretty steep road at the best, but as we passed many considerable depressions, I saw we must add at least one thousand feet to the climbing to be done. When we had been on the road two miles, we passed through a cloud which hung on the mountain side, and was so much like rain, if it was not rain, that we soon found we were getting wet; but by the time we got our water-proofs on the cloud had passed, and that was the only drop of rain we saw during the trip. About two miles from the top we called a halt in a depression or ravine where there were some bushes which afforded a shade. One of the guides went some distance from the trail and filled the canteens with water. Mr. Dickey had sometime before, in a clump of willows, cut some tent-poles, which had to be packed thence to the top.

When we resumed our journey we found the way much steeper, and, therefore, met no depressions, unless possibly one or two of a few feet. It was up, up, up, continually,

and very steep. It seemed absolutely terrible to us who were not used to this mountain climbing. In but a few places did we find the road so rocky as to embarrass us much, but so steep was it that when we looked up it seemed as though the mountain hung directly over us. The last half mile was the steepest of all, but at length we came to where the advance party had hitched their horses, when we dismounted, left our horses to the guide, and advanced about one hundred feet through the coarse volcanic sand, when we stood upon the rim of the great crater.

It is not easy to give a clear idea of this great exhibition of nature's work. It has been carefully surveyed and mapped by Professor Alexander. Its longest diameter stretched away before us, till we could not see its extent. This the professor found to be seven miles from where we stood. The floor is two thousand feet below. Most of the way the walls are entirely composed of congealed lava, though right beneath us the sides have fallen down so as to form a slope upon which bunch grass has taken root, and a descent to the bottom is practicable. In two places the rim of the crater is broken away, showing an enormous outflow of lava in each. One of these is at the point opposite to us, seven miles away, and the other was to our left, three or four miles away. The view of the first was interrupted by intervening cones which dot the bottom of the crater; while the view of the second was uninterrupted, and it seemed like looking down a great black river till it disappeared over a cataract.

When the liquid lava had run off the volcano was still active, and found vent in what may be called blow-holes through the bottom, each building up a cone of ashes and scoria, the top of which is now depressed, forming a crater in the shape of a bowl. Some of these cones Professor Alexander found to be seven hundred feet high, and the craters within their tops are as large as was the crater of Vesuvius twelve years ago, though in looking down upon

them it was difficult to appreciate that each would of itself have formed a very respectable volcano in any other country. All of these cones seem to be composed of a red volcanic ash. The cone nearest to us — indeed it looked as if right beneath our feet — seemed to have been in eruption last, for the side toward us had been thrown down, and from it had issued a stream of lava which flowed down upon the river of lava to the left. This Professor Alexander puts down as "recent lava flow," and it looked to us as if it had cooled but yesterday. It was too large a field to be embraced at a single view or to be understood at a glance. It required a study of hours to comprehend it, even in a small degree. Imagine a crater two thousand feet deep, extending away for so many miles, surrounded by adamantine walls, the floor pimpled over with little cones, larger, however, than St. Peter's Church in Rome, in fact, a volcanic crater large enough to contain a city of two million people, and you may form some idea of the extent of what lay stretched out before us; but of all else you must come and see before you can realize it, even partially. We saw many wild goats within the crater, grazing on the sides, where these were so decomposed that grass could find sustenance. One flock was nearly below us and about two thirds the way down, and so deceptive is distance when looking down that they did not look larger than rabbits. Another flock, nearly a third of a mile away and as low down as these, looked larger, but a good field-glass was necessary to tell what they were in both cases.

Although the principal field of observation was simply desolation itself, yet one never tired looking at it. Involuntarily the mind would revert back to the time when the lava ledge on which we sat, and which formed the rim or edge of the crater, was hot; when the great river of lava, now black and silent, was liquid and flowing impetuously toward the sea; or, later still, when those innumerable vents in the great floor were throwing out volumes of flame,

smoke, and steam, ashes and cinders building up the cones, which now present the appearance of bursting bubbles on a kettle of mush.

Mr. Alexander, with Mr. and Mrs. Watson, who had arrived an hour before us, and who had been away to visit some higher points, now returned, when we took our lunch under a projecting ledge of lava, soon after which they mounted their horses and started on their return to Haiku. I confess to a feeling of loneliness when they had disappeared down the steep declivity, though it was not absolute desolation around us, for but a little way down were bunches of grass, upon which the horses were feeding, and we had friends with us who made everything cheerful and bright.

In the course of the afternoon the tent was pitched upon a bed of coarse volcanic sand, fagots were brought up from below, and everything made ready for the night. The altitude of our camp the aneroid showed to be nine thousand nine hundred and fifty feet. Mr. Alexander found the highest point of the cone to be ten thousand and forty feet, which was considerably to the south of us. There was nothing to interrupt the view of the country to the north quite to the sea-shore, fifteen miles away, where like a silver thread the foam of the breakers showed itself. Beyond was the great Pacific, which appeared to rise up from the coast till it brought the horizon on a level with our position, as if there were a great valley between us and the horizon, the bottom of which was at the coast, where the land and water met. This illusion was absolutely perfect, and is not observed where the distant horizon is a plain of earth; at least, I observed nothing of the kind when standing at that altitude on the Rocky Mountains and looking out upon the great plains to the eastward. There was no defined line between the plain and the mountain, like the sea-coast, nor was the plain a level, like the sea, but descended all the way, thus carrying the horizon to a much greater distance. Indeed it was a long time before I recognized the ocean at

all, but I took it to be the sky, and was loth to believe that it was the sea which seemed to rise up on the opposite side, just as the land did on this; still at the horizon it appeared at the same level. When we remember that at this altitude the visible horizon was nearly two hundred miles away, it will be readily appreciated that the sea and the sky seemed almost blended, and even with the aid of a good glass the horizon was not always well defined, although the atmosphere was remarkably transparent, not the least semblance of a cloud or a mist anywhere appearing. Notwithstanding it was more than twelve times as far from the horizon to the shore as it was from the shore to us, both distances appeared to the eye to be alike, so that the water side of the apparent valley seemed to be just as steep as the land side. This illusion was not confined to myself, but was common to all beholders, and I presume will be always observed where the same conditions exist, — that is, a high altitude, a clear view of the land to a distant shore, and of the sea beyond. I wonder if Bilboa observed the same thing when he discovered the Pacific Ocean from a high peak of the Andes? I do not remember that he makes any mention of it.

Away to the eastward, seventy miles distant, the high mountains on Hawaii told us where were Mauna Kea and Mauna Loa, and to the westward, right over the top of the mountain on West Maui, the saddle-back mountain on Molokai stood conspicuous. The straits, say thirty miles wide, separating each of these mountains from Maui, on which we stood, were not in sight, but all seemed to be one land. The afternoon seemed to fly away almost without notice, as we now studied the details of the crater and now viewed the grand scenes in other directions. While half a day is too short a time to study the views before us, yet the moving cause which had prompted us to camp for the night on Halakala was to see the setting and the rising of the sun from that elevated stand, — a spectacle which had been represented as very grand under favorable conditions.

Although no clouds appeared, there was a smoky haze in the west, which so obscured the view as to disappoint us in what we expected of the setting sun. We could see him as he descended in the west, far beyond Maalia Bay, which lay stretched out before us nearly twenty miles away, but the obscurity prevented us from recognizing the sea beyond, and we could hardly tell when the red orb had fairly sank to rest. We had watched the lengthening shadows as they stretched themselves across the darkening abyss below us; the sunlight ceased to gild the top of one conical crater after another, and by degrees a forbidding gloom settled into darkness, while the wild goats, which had been skipping from crag to crag cropping the scanty tufts of grass along the sides of the great crater, now descended to the bottom and retreated to their night abodes. Night had settled upon the valleys far below us, and we alone in our elevated position still had light. The sights of the day had ceased. The great rocks, which some of the party had amused themselves by detaching from the edge, no longer indicated their course by clouds of dust. We left our lava seats upon the brink and descended to the tent.

The Kanakas had built a cheerful fire and brewed a stout pot of coffee, while we sat down at the door of the tent and dispatched our evening meal with a hearty relish. At sunset it was discovered that our water canteens were emptied when the coffee-pot was filled. But Charley was equal to the occasion, and induced the oldest Kanaka to go in search of water. In an hour he returned with the canteens filled with good cool water, which he had found in a basin or grotto of the lava bed, nearly two miles away. Our anxiety was now relieved, for the prospect of being without water till the middle of the next forenoon was anything but pleasant, and thirst seemed all the while to prey upon us.

Until nearly sunset we had not been much discommoded by the rarefied state of the atmosphere; but then it began to oppress us. When sitting still it was possible to inhale

air sufficient to supply the demand for oxygen; but a walk of one hundred feet would set one to panting as if a foot-race had been run. We did not sleep much that night; some of the party had never slept in a tent before, and the novel situation did not tend to promote sleep. The coarse, hard sand, almost like drops of iron, on which we laid our blankets, did not make a bed of down; and the strong coffee we drank for supper no doubt promoted wakefulness, and we attributed much of our sleeplessness to the rarefied atmosphere. If we could not sleep or feel sleepy, we had a jolly night of it. C. and B. sang all the funny songs they knew; and we all told all the funny stories we could remember; and one o'clock came before there was a wink of sleep. Then I turned over, dug a hole in the sand so that my hips should not hurt it, and dropped to forgetfulness while the merry song was still in progress. When I awoke the tent was still, and some of the others were asleep. Thence to five o'clock I slept very well, but others, I think, slept very little. At five the camp was aroused. The Kanakas came and made a rousing fire, while we either sat up upon the blankets and talked in a lazy, listless way, or groped about in the darkness outside, watching for the signs of approaching day. We had been told to expect two inconveniences; one was severe cold during the night, and the other was fleas which were to be abundant and ferocious. There was nothing of the kind; the air was warm and balmy all night long, and but little wind, and not a flea was reported. The head Kanaka, however, excused himself for this by saying that it was in a cave — a lava bubble where visitors generally sleep (or try to) — half a mile below, that the fleas were so troublesome. We were quite satisfied with the explanation. When the day began to break we all repaired to a high perch on the edge of the great crater and watched its progress. Not a cloud was above us, and every star seemed to shine with double brilliancy. These now began to go out one by one; rosy tints began to skirt the eastern

horizon, which still seemed to be on a level with us, and we anxiously awaited the coming of the sun. So soon as the light became sufficiently strong to show it there was exhibited a sight of surpassing beauty and grandeur. The whole valley below us and extending far out to sea, though not to the horizon, was covered with clouds without a break anywhere to show the earth below. I judged these clouds were fully five thousand feet below us, and so we looked directly down upon them. The top of the clouds seemed to occupy a horizontal plane, but were not level. They were broken into hillocks of mist of very uniform size, and as the light increased these were all illuminated with a brilliant silver lustre. Imagine yourself looking down upon five hundred square miles of horizontal plain, all covered with immaculate wool, not packed together, but laid so loosely that the spaces between them could be recognized, all of which had been touched by a magic wand and their whiteness turned to a silver gloss, still preserving the rich softness of the fleece itself, — and you may form a very feeble conception of what we that morning saw. But this field of fleeces was not still; it softly moved and gently undulated as if it were animated by a life within itself. It did not hasten away like a coquette, coy of her beauty, but lazily lingered in the valley to receive the salute of the morning sun. As the light increased it lengthened in its hue, and the first rays of the rising sun which reached it spread over it a pinkish glow, but this lasted but a few minutes. It soon began to lose its beauty. The fleeces blended and became more indistinct. A wild commotion now succeeded. The cloud was broken into fragments, floated about distractedly, and was soon gone, we knew not whither. Now the sun had fairly risen upon those who occupied the lower valley and shone upon them brightly, lighting up distinctly the intervening valley. The long line of surf, where land and water met, showed its frosted line of foam, and the blue sea beyond seemed to be lifted up, as yesterday, bringing the

horizon to our level. The sunrise was grand, no doubt; so I have often seen it on Lake Michigan, but there the horizon is very near where the sun first peeps above it. From Halakala we see the sun rise from an immense distance with a great valley intervening. It seems as if it arose from behind a great blue mountain a great way off, when the beholder stands on the top of another range with no intervening object to obstruct the view.

The view within the crater, also, was one of surpassing interest. At first it was filled with a gloom that was almost appalling. Deep darkness pervaded the whole and seemed a realization of the blackest picture of Hades. As day approached it seemed to throw its light upon the top of the darkness, covering it with a sort of sickly hue, while it seemed unable to penetrate the depths below. In a little time, however, it began to break through the pall, at first on the western border, but when the first rays of the sun touched the face of the vertical wall on that side, the darkness fled as if in fright, and, almost instantly, objects became visible throughout the crater.

We did not tarry long. So soon as the cottages and cornfields away down towards the sea were fairly reached by the sun's rays, we again carefully surveyed the whole field of observation, that nothing of interest or of beauty might be overlooked, and hastened to the tent. One of the party was suffering from a sickness frequently experienced at high altitudes, caused by the rarefied atmosphere. It much resembles seasickness. It is called mountain sickness. This was unfortunate, for it deprived her of a breakfast when renewed strength was so necessary to help her down the mountain.

After breakfast, and while the things were being packed and the horses saddled, I went again to the edge of the cliff to take a last look of this, one of nature's greatest wonders. For nearly an hour I sat there, even more interested than I had been yesterday. It seemed as if I now only began to

appreciate its grandeur, its sublimity, its desolation. I could have sat there another day and enjoyed it all the time; but it could not be, — a call from Charley broke my dream. I rushed down, only in time to help the lady on the horse and then to mount my own. It was now past nine o'clock, not a breath of air was stirring, and the sun beat down fiercely upon us. The invalid was weak from loss of sleep, from mountain sickness, and want of breakfast. My place was right behind her in the narrow trail, and I saw that she reeled in the saddle as we started down. A stout Portuguese, whom Charley had brought along for general help, walked by her side with his hand upon her to give support when needed. As I have said, the first half mile was the steepest, — almost as steep as an ordinary staircase, — though the trail was tolerably smooth. Her horse was gentle and sure-footed, but as it is harder for the rider to go down a mountain than to go up it, I confess to great anxiety, and carefully watched every step. It was soon apparent that she sat firmer in the saddle than at first. At the end of the half mile she said she could breathe easier and felt stronger, and thenceforward she went on much better. At our resting place of yesterday we again dismounted, and stopped half an hour, when she ate a cracker and drank some water. As we only expected to reach Olinda, we had the day before us, so we stopped and dismounted several times and occasionally walked a while. In about four hours we accomplished the eight miles and reached the mountain-house, much fatigued, no doubt, but in much better condition than I had feared. An abundance of nice refreshments and good rest recruited the party marvelously. Both B. and C. refused to leave us here, though a two hours' ride would have taken them to their homes.

Although for three miles beyond the house the road is not constructed for carriages, Charley succeeded in getting his express wagon to the house by noon the next day, and by walking a few of the worst hills, and fastening both hind

wheels down the steepest places, we got safely to the carriage-road where we were surprised and delighted to find Mr. Alexander's carriage in waiting for us. I willingly left the saddle for the carriage there.

We remained at Haiku till the 19th when we went to Sunnyside, where we remained two days with B., and then went to Wailuku, and were again the guests of Father Alexander for one day, when we went to Mr. Cornwall's, where we remained till one o'clock on the morning of the 23d, when we got into Cummins's express wagon and started for Maalia Bay, four miles distant. Here we had to while away three hours of night, either walking about, or sitting or standing in the little warehouse, which was literally packed full of Kanakas, also waiting for the steamer.

Just before daylight the boat was reported in sight, which made a lively buzz in the native hive, and about sunrise we were glad to find ourselves once more on the deck of the Like-Like. The island of Maui is the second in size, and is next to the most easterly. The two weeks we had spent there had been full of pleasure and of interesting observation, not only of the natural phenomena, but of the people and their various industries. By their kindness and hospitality our friends had done everything to make our visit agreeable. We shall long and gratefully remember them.

As we sailed along the southeast coast the broad black lines extending from the coast half way up the mountain plainly told us of the immense lava flows which the great volcano had thrown out in its expiring effort; as before shown, this occurred after the island had been inhabited by man, so that the fearful action of the greatest of volcanoes was not hidden from human eyes.

We now bore away across the channel for Hawaii. This channel is twenty-five miles wide at its narrowest point, and was forty miles wide where we crossed it, and has as bad a reputation as the English Channel, but we found it remarkably quiet, and the afternoon sail was delightful.

At the beginning of this century there were three active volcanoes on Hawaii, which appeared disconnected. Now there are but two. In 1801, a great flow of lava burst from the side of Hualalai, which ran down to and into the sea, thus enlarging the area of the island. That seemed to be an expiring effort, for since then Hualalai has given no signs of life. The height of the cone crater is eight thousand two hundred and seventy-five feet, though the lava forced a vent at a point a considerable way down its side. The next, and by far the highest, active volcano in the group is Mauna Loa. The cone crater of this has an altitude of thirteen thousand six hundred and fifty feet. This high crater is always active, but I have met no one who has seen in it a lake of liquid fire, as is almost always found in Kilauea, although Miss Bird and Mr. Green saw such a lake there in 1873. Formerly it overflowed, and by its overflows built up that great mountain which after all is largely a mass of recent lava. But the sides of the mountain have weakened much since that time, for all its eruptions in modern times have been from lower levels, bursting through the mountain side. These eruptions have been frequent, and have thrown upon the surface immense quantities of lava, that of 1859 flowing in an immense river a distance of thirty miles to the sea, extending the shore for more than half a mile. While the frequent and enormous eruptions show that Mauna Loa is by far the largest active volcano in the world, yet in external appearance it bears no comparison with Kilauea. To the observer this is the most wonderful spectacle of its kind on the face of the earth. It is situated about twenty-five miles in an easterly direction from Mauna Loa, not in a cone, as is the case with all other volcanoes, nor on a mountain, but it is simply a great hole in an elevated table-land which slopes away in all directions. There is a considerable depression between it and Mauna Loa, so that it cannot be said to be situated even at the foot of that mountain; and as the eruptions from the former are at a much higher altitude

than the top of the latter, and seem to have no influence on the level of its lava, the evidence seems conclusive that they have no subterranean connection. While earthquakes are very frequent in Hawaii, and of quite common occurrence in the other islands, yet they seem to have no necessary connection with the volcanic eruption, and indeed the eruptions from Mauna Loa have been very rarely accompanied by earthquakes, but the great eruption of 1868 was accompanied by one of the most violent earthquakes which has been witnessed upon the island within the century; although in this eruption the lava burst out forty miles from Kilauea, and not more than twenty-five miles from Mauna Loa, the evidence is considered conclusive that it was from the former volcano. I am informed by those who were upon the ground and carefully examined it, that it was easy to trace the course of the subterranean channel through which the lava flowed from the crater to its outburst, by cracks and fissures along the surface from which steam and gases escaped; and about half way down its course the side of the mountain was thrown off, and there was an outflow of mud which overwhelmed everything in its course, and extended over several miles to a great depth. This was upon the stock ranch of Judge Lyman, and within sight of his residence, which fortunately was upon higher ground, and so he escaped the threatened danger though he lost a large amount of stock, which was buried in the flow. It was at this moment that the great earthquake occurred, and this point seemed to be the centre of the agitation. All this took place in the daytime, and his description is most graphic, not to say appalling. Stone walls were thrown down and scattered about so that even their foundations were displaced; houses were thrown down, trees swayed and rocked about with rather a spiral motion, their trunks at every angle to the horizon; as mothers fled with their infants they were thrown to the ground, and rolled about like playthings. As everybody was thrown down no one could help another,

and in the midst of this appalling scene the side of the adjacent mountain was thrown off, and the mud flowed out as stated. So soon as the agitation sufficiently subsided, and the horses could be found and caught, the whole family left the dangerous place for Hilo, and Mrs. Lyman says she has never returned to the place and never expects to. The ranch is now being converted into a sugar plantation. No lava appeared with this mud flow, but was flowing in a deeper channel, and only appeared nearly twenty miles below, where it burst out a few miles from the sea, to which it flowed in a direct course, widening and deepening as it went, till finally it dashed its cataract of liquid fire into the placid waters of the Pacific, and so it continued for weeks, extending the shores of the island for a considerable distance.

In 1840 there was an eruption to the eastward of Kilauea, and about twenty miles from it. This also occurred but a few miles from the sea, which it reached after a few days, and made further encroachments upon the waters. This was on the opposite side of the island from the flow of 1868. These are the only two eruptions within this century which can be clearly traced to Kilauea. In both cases the lava was drawn off from the lakes within the crater.

I appreciate the difficulty of describing this wonderful volcano to one who has never seen it. Though he may have seen Ætna and Vesuvius, yet it is only the congealed lava flows which will enable him to understand a part of this description, unless, indeed, he has witnessed an eruption; then he can understand how liquid lava flows. Without this experience the most vivid or the most simple descriptions must fail. Again, no two visitors see this volcano in the same condition, if any considerable time intervenes between their visits, and sometimes a single day makes very great changes, though at others months are required for material alterations.

There are three points upon the coast from which the volcano may be conveniently visited. The nearest is Keauhou,

whence the distance is about fourteen miles; the next is Hilo, from which the distance is about thirty miles; and the third is Punaluu, which is about forty miles from the crater, and is almost directly opposite Hilo, the volcano being nearly in a line between them. By far the greatest number of visitors go by the way of Hilo, which, by reason of its fine harbor, is more accessible by water. Besides, it is the largest place on the island, with cultivated and refined society, whose hospitality and courtesy to strangers seem to know no bounds.

On the 24th of January, when I went on deck in the early morning, I learned that we had not long since turned the northwest point of the island, and were now standing along the coast for Hilo. A heavy sea was rolling in from the north, and breaking wildly on the iron-bound coast, which consists of a vertical rock from one hundred to five hundred feet high, broken frequently by deep gulches coming down from the interior, some worn to the sea level and others pouring their waters into the ocean in cascades of various heights. There was no wind, and the ship was rolling heavily in the dead swells. The breaking of the swells upon these bold rocks, and within almost a stone's throw of us, presented a grand sight. The long line of foam at the foot of the cliff throwing the spray sometimes a hundred feet high suggested that it was an unpleasant place to be thrown on shore in a gale of wind.

From the top of the cliff the country rises gradually to the forest, from five to ten miles back towards the mountains. Here were the rich cane-fields, which yield from two to six tons of sugar to the acre, some already ripe for the harvest, while others were but lately planted. Here there is no season for seed-time and harvest, or rather, these are always in season, and both are going on all the year round.

Soon after ten A. M. our anchor was dropped in the spacious bay of Hilo, and directly the shore boats were alongside, and very soon a gentleman introduced himself as Mr.

Rufus Lyman, a son of Rev. D. B. Lyman, who would take no denial, but immediately took charge of us and ours, put us in a nice whale-boat manned by a crew of Kanakas, and pulled in for the shore. The swell was so heavy that we could not well land at the little dock, so they deftly beached her and carried the ladies ashore, while we waited for the waves to recede, and then stepped to land without wetting our feet.

In Hilo there are no carriages or carriage-roads, but, as if anticipating its necessity, we found a hand-carriage awaiting in which Mrs. C. was placed, while we mounted horses, and were soon under the hospitable roof of the Rev. D. B. Lyman, the venerable missionary, whose name and hospitality are well known in every nation whose ships have touched at these Islands. The plan that Mrs. C. should accompany me to the volcano had to be abandoned, at least for the present, in consequence of an injury she had received on the ship that morning. I made preparations at once to go with a couple of traveling companions, and shortly after eight o'clock on the morning of the 26th of January we mounted our horses and took the trail for Kilauea, preceded by a native guide. I was mounted on a little white cob which looked ill able to carry heavy weights, and Mr. Lyman was so doubtful of his ability to take me through that he put me upon one of his horses which took me out seven miles, while my horse was led. The first four and a half miles were nearly level, and through a prairie country composed of partially decomposed lava, broken blocks of which seemed to cover nearly half the surface. We then crossed the dry bed of a creek and entered a forest composed of tall Ohio or native apple-trees loaded down with creepers about one inch in diameter, which ascended to a great height. It seemed as if hundreds of these great vines were attached to a single tree so thick that it would seem difficult to run the hand through. The diameter of this cluster of parasites, in many cases, was as much as six or eight feet. These will

eventually, no doubt, kill the tree; but what is very remarkable, so soon as these are killed, which is sometimes done by the encroachments of the wild cattle which are fond of the foliage, the tree dies. No doubt they form a sort of mulch which is necessary to the vitality of the tree, especially after it has had this protection from the rays of the sun for a considerable time. In this forest there was an incredible burden of vegetation, consisting of tree ferns and a great variety of shrubbery. It would seem impossible for an elephant to penetrate it, and no man can go into it without cutting his way along. Lately, I am told, the wild cattle have come down from the mountains and have attacked this forest, killing it clean as they go, so that the planters aré becoming alarmed and contemplate making a vigorous war upon the intruders; for to this forest, which extends for more than fifty miles just back of the sugar plantations, they attribute the abundance of rain-fall which is so essential to their well being.

Where we crossed the forest was but two and a half miles wide. The trail was paved with broken lava through the wet places, and was all the way made very passable, though there are many very steep and rocky ascents and descents, which only a horse trained to the work could manage with a heavy man on his back. In many places the undergrowth extended its branches quite across the trail, so that we had to push our way through them.

I reached Cocoa-nut Grove, a cluster of about a dozen cocoa-nut trees at the further border of the forest, with the boy who led my horse, and who was to return with Mr. Lyman's, before ten o'clock, where we dismounted, and I stretched myself under the shade for a rest and to await the remainder of the party. In about twenty minutes they came up and joined me. We were very thirsty, but half a dollar inspired the boy with confidence in his climbing ability, when he skipped up one of the cocoa-nut trees, smooth straight stem as it was for fifty feet; when he reached the

fruit at the top, he threw down five of the nuts, which were green and in prime order for the milk, and furnished all that the five of us could drink. This milk is very sweet and refreshing, so sweet that when I first tasted it in Cuba I did not like it, but I found myself very much resigned to it this hot day.

After half an hour's rest we again mounted. I was now on my little white cob and expected to be left behind directly; but I started next after the guide, who hurried along pretty smartly, considering the rough trail we were in, and to my astonishment the little beast kept well up, without a severe use of whip or spur, and I began to believe that he could stand it as long as I could. We soon left the rest of the party out of sight, and when, after about six miles, we came to where the trail forked, it was manifest the guide must stop here or the others might take the wrong way; so I jogged on and soon struck upon a more recent lava flow, and had my first experience in traveling over a lava bed. I reached the Half-way House (which, by the by, is not half way) about twelve M., stripped my horse and tethered him out to dine on the grass (one always carries a small rope about thirty feet long on the horse's neck here). Inside I found the house clean, the floor covered with mats, with several pillows against the walls, plainly inviting me to lie down. Now this was the first horseback ride of more than a few short miles I had had for many years, and I began to feel as if I had been rolled between two planks. I got off my spur, took off my coat and vest, and threw myself on the matting in an abandoned way, and cried out, "Lomi-lomi." This is the name of a process among the natives much like what is called the movement cure at home, as I understand it, and is practiced by women mostly, among all classes, although it has its professors who claim to perform marvelous cures. It consists not of rubbing, but of pinching, in a peculiar way, towards the centre or bone, as well as by bringing the thumbs and fingers towards each other. The

pressure is sometimes very gentle, and at others very severe, as much as you are disposed to bear. That was a word the natives could understand; so immediately a stout, middle-aged woman squatted down by me and began the operation, commencing with the feet and working upward. She soon called a girl to take her place and went about getting some lunch. The girl went over me pretty thoroughly, and by the time the remainder of the party came up I was much rested. She then went over Mr. and Mrs. W. in succession, and well earned the fifty cents with which she was more than satisfied.

The country we had passed over since leaving Cocoa-nut Grove, say seven miles, was mostly prairie or treeless, a lava bed so decomposed as to give nourishment to a heavy growth of vegetation. We passed through some skirts of timber and saw more of the *ti* than I have seen in all of the rest of the Islands, though a few plants are found in almost every garden. This is a shrub or little tree from one to two inches in diameter and from two to eight feet high, with a smooth, straight trunk without branches and a cluster of leaves at the top; these leaves may be from ten to fifteen in number, and are from fifteen to twenty-four inches long and five to six inches wide. They are used as wrapping paper in the markets for everything that is sold, and it is astonishing to see how deftly the natives will do up even a parcel of potatoes in them. Cattle are fond of them, and destroy all in their range. From the root the natives distill an intoxicating drink which is as clear as water. This distillation is strictly prohibited and severely punished, and all the liquor found is confiscated, and that was the way I got a bottle of the whisky. They admitted that if I took it to Chicago it would never hurt a Kanaka.

We rested till two P. M. at the Half Way House and then resumed our saddles. The longest half of the road (sixteen miles) still lay before us, and by far the roughest and steepest. By aneroid I found the Half Way House to be one

thousand one hundred and fifty feet above the sea, so that we had to rise nearly three thousand feet on the road before us. The first six or seven miles was a very rough lava road, up and down in steep pitches, sometimes along sideling places where it seemed impossible that a horse could keep his feet, and over rolls and surges where the lava lay in contorted forms as if it had cooled but yesterday. There was considerable vegetation over most of the surface, and occasionally skirts of forest, and a large forest on the right for a considerable distance. Soon after starting we left Mr. and Mrs. W. out of sight, and when we had gone about six miles, I called a halt and laid in the shade of a bush till they came up. The guide said the rest of the way was a more level road and better, but I resolved not to leave my companions again, for it was now clear that night would overtake us before we should get through. The trouble was with Mr. W.'s horse. Though the best looking of the lot he would not be hurried, and the rider was nearly worn out trying to hurry him ; while my little affair, though with much the heaviest load, skipped along without much urging. With two hundred and seventy pounds on his back he would trot along without a stumble, both up hill and down, where another horse not used to it could hardly have picked his way at all. It was astonishing to see him clamber up and down rocky steeps, with steps sometimes nearly two feet high. In such places I let him have his own way, and was interested, in very bad places, especially when descending, to see him stop and deliberate before taking a difficult step. Then he would settle low and partly slide his fore feet down till they reached a firm place, and then drag the rest of us slowly after. I cordially recommend that horse to any heavy weight who wishes to visit Kilauea. After we had gone about eight miles we entered the heavy timber which had been most of the way on our right. In this we soon came to a large cattle-pen, when I asked the guide how far it was to the volcano house. He

said four miles, and I felt encouraged, as we had yet nearly an hour of daylight. But we found to our sorrow that he had a very poor idea of distances, for it was seven miles. We went on merrily till darkness fell upon us, expecting every moment to see the house, but we did not see it for another hour. It was very dark, in places the road was very steep and rocky, and so we had to creep along the best we could. Much of the way the dark forest seemed to overhang the trail, and we had to trust to our horses to take us along safely. The guide went ahead, and I followed, and, being on a white horse and having on a white duster, served as a guide to Mrs. W. who came next. The guide ahead I could rarely see, though I kept as close to him as possible. If he had told us it was seven miles from the bull-pen, disappointment would not have been added to our fatigue and embarrassed way; but straining the eyes to catch a light for a whole hour was really the most painful part of our experience. It really seemed as if there was no end to that road. Soon after dark we met some cattle in the road, and having a wholesome dread of wild bulls, we would have given them a wide berth had it been possible; but as they quietly stepped aside into the bush, we saw they belonged to the ranch, when we took hope and believed we must now be near the house. But even in this we were disappointed; they had wandered away in search of water, for there was a great drought about the volcano, as we afterwards learned to our great discomfort. But the house was reached at last, when John Kane, a tidy little — not very small — Irishman, with a stout Kanaka wife, rushed out into the darkness, bade us a hearty welcome, and most gallantly helped the lady from her horse. The rest dismounted as best they could; as for myself I could hardly stand.

After dismounting we turned around and looked in a westerly direction, and saw in the pitchy darkness the glowing fires of Kilauea. In the darkness we could see nothing

but the fires and their reflections. We could not see the liquid fire in the burning lake, but we could see where it was, and the great glow which arose from it, sometimes bright as a burning city, and then the brightness would fade till it was faint and sickly, when instantly a great light would flash up which for a short time would illuminate the whole heavens. This lake was actually about two miles then distant and about four hundred feet below us, though we stood within two hundred feet of the rim of the great crater, but of this we could see nothing. This was not the only grand display we saw. A little to the right of the direction of the lake, and as it appeared nearer to us and at a lower level, glowed a great number of real fires. It looked as if there was a great city before us illuminated with calcium lights, only they were not constant. Sometimes we could see many and again but few; sometimes one would burst out like the flames from a great store-house, but in a few minutes its light would pale and perhaps soon go out, while a dozen other places would be lit up all around, again to fade and die while others sprang to active life. It was a grand spectacle, yes, awfully sublime, and in its contemplation we forgot our fatigue, and all our toil, and would have been repaid for a journey half round the world. The transient lights we had seen were a surprise to us, and an explanation was asked of John Kane. He said that the volcano was now in eruption, and what we saw was the running lava from the southern lake which had burst out through the side of the cone, which confined it. That in its flow it rapidly crusted over and dammed back the fluid, when the accumulated pressure would burst the crust, and flow on till it again became congealed, and the current was checked, and, again breaking forth, gave a great light till it was hidden by the quickly formed crust. The flow was not in one main stream, but it was divided into many channels and depressions in the surface of the old lava which it was overflowing. This explained how we saw so many lights and of such short dura-

tion. After looking at this picture a good while, we went into the house, and I got upon a lounge and sang out *lomi-lomi*, when immediately John called his wife who sat down to the work in earnest and gave me a good going over, with more energy and effect than had been manifest at the noon exercise by the girl. This rested me much, and I pronounced myself all right when dinner was announced.

Our accommodations were here quite as good as we expected. The house is large and comfortable, with a great broad fire-place in the sitting-room. This was the only fire-place or other arrangement for making a fire, except for cooking, which I saw in the kingdom. We had separate bedrooms with comfortable beds, and at table we had plain fare, but enough to eat. We did not forget that everything had to be brought from the coast, and we did not expect the luxuries of a city hotel. The great want was water. That had either to be condensed from the steam escaping from fissures in the earth, or brought from a stagnant pool, five miles distant, in the woods. My aneroid marked the altitude of the house at three thousand nine hundred and ninety feet.

We arranged to breakfast at 5.30 in the morning, and to go into the crater as early as the light would permit. I was, no doubt, pretty tired, for it was the longest ride I had taken in the saddle for thirty years, and there is a good deal more of me to be shook about than there was formerly. My horse was not an easy goer, but then he went briskly, and I did not have to exhaust myself with whipping and spurring; but at best a thirty-mile ride over such a trail, all things taken into account, was no light task for a beginner, so that notwithstanding all my lomi-lomi-ing I did not sleep well. At five o'clock we turned out, got our coffee, and at 6.40 started for the crater. The sun was not yet up, but the light was sufficient to disclose the scene before us.

From the accounts I had read of this volcano, the impression received was very incorrect, and probably no one will

ever write a description which will convey a correct idea of it, simply because he will state but a small part of what he sees. To set down all would fill a volume, and the writer forgets that the reader cannot fill up the field by the imagination. Probably I shall succeed no better than others have done.

The great crater of Kilauea is a hole in the ground approximately three miles in diameter and six hundred feet deep. In most places its walls are nearly vertical. As viewed from above, the floor of this crater is nearly level, and covered with black, congealed lava, except near the westerly side or end, — for it is longest east and west, — where elevations are observed, and amidst these a glow of light is seen with smoke and steam, showing where the burning lake is. This lake, I had been often told, could be seen surging at one's feet when standing on the rim of the crater; and so it can, but not from the rim of the great crater, which, as stated, is six hundred feet deep, and three miles over, but from the rim of the little crater, which is within the big crater, and within which is the boiling lake. It is necessary to understand that here is a crater within a crater, — indeed, several craters within the great crater. At the time of our visit, within two of these craters, near together, were burning lakes of liquid lava, which may be considered the usual condition of things; but sometimes their number is greatly multiplied., — even as many as twenty having been counted in different parts of the great crater at once. At no time has the whole of the great crater been occupied with the fiery lake, nor, indeed, any considerable portion of it, though frequently the lakes have been so extensive, and so near the side, that they could be looked into from the top of the *pali* or precipice, and their surging waves distinctly seen. To see this now an excursion within the main crater was necessary, and so it is usually.

The Volcano House stands on the top of the bluff, on the northeast side of the crater; and as Halemaumau, as the

burning lake is called, is near the southwest part, a visit to it involves the necessity of traveling nearly the whole length over the black lava with which the whole of the floor is covered.

In the morning light we could see none of the reflections from the lakes, nor the lights from the flowing lava, which were so conspicuous the night before. The wind was from the southwest, and blew the smoke and gases directly over the lakes, so that the chances were that we should not be able to see them that day ; still, we could see the flowing lava which was pouring out of the base of the cone which inclosed the largest of the two lakes then in activity, — and that was something, only less interesting than to see the fiery lakes themselves.

At 6.40 in the morning we commenced the descent, preceded by a guide of the place with a box for specimens on one end of his pole, and canteens of water on the other. The trail by which we descended, in many places, was so steep that we had to clamber down the steps, composed of sticks laid across, to which we clung by hands and feet, with points of lava rock projecting between them, to which we were enabled also to hold on. It was not so very steep and difficult all the way, the longest stretch being about one hundred feet. More than half-way down we came to a sort of table, across which the trail led for one hundred and fifty yards, when we again pitched down till we reached the lava floor. Here we sat down to rest and look about us. The aneroid showed that we had descended four hundred and fifty feet to the first lava, which might be considered the floor of the crater.

We now commenced our journey over the lava, preceded by the guide who had traversed it for years. For the first two miles the trail was pretty distinct, but after that it practically disappeared, though in places we met traces of travel. We found that what from the top looked like a smooth, black floor was thrown into ridges or swells, and

heaps piled up and deep depressions. I took an observation in the lowest, as we supposed, of these, and found it three thousand three hundred and eighty feet above the sea, or six hundred and ten feet below the house on the cliff. When we had got about two miles out, observing that the wind was still blowing the vapor over the lakes, we sat down upon the lava while the guide went off to explore. He soon returned, and motioned us to follow, when he led us to the flowing stream of lava. When he first pointed to it we did not recognize it, for he had not explained what we were to see, and it looked at the moment nearly as black as the old lava over which it was flowing. Had we been alone, but for the radiated heat we might have stepped on it, but very soon we saw it was coming directly towards us, and presently the crust was broken and out rushed a current of lava almost as fluid as water, but instantly the surface was chilled, the rapidity of the flow checked, and, finally, nearly stopped, till the pressure behind would again burst the crust, when it would again flow more freely till again checked by the congealing surface. On the windward side the crust was soonest formed and was the thickest, so that the current was constantly forced in its direction to the leeward. To sit in front of a current of flowing lava would seem a ticklish thing, but a few minutes' observation was sufficient to dispel all fear. Its progress was so slow that one could sit in front of it till the heat drove him back. The flow was not in a continuous current breasting along, but in many small currents. A rent would be made in the side of the crust, when the lava would flow out, which would congeal on the top and sides as it flowed along, forming a great tube or conduit. At the front of this tube, which it made as it progressed, the red lava would be seen as it flowed along, but not two feet from that front it would be as black as ever; and so it would keep on, creeping over obstructions like a thing of life, till this conduit would be thirty, forty, or fifty feet long, when

finally the force of the pressure would become less, its progress would cease, and it would burst out at some other point and go on in the construction of some other fantastic form. The modes and characters of this flow were infinite, and it is impossible to describe them all; there was only this general characteristic, that its progress was very slow, ever seeking the depressions in the old lava which it was overflowing, and the perpetual and rapid congealing of the surface by which its progress was impeded, and by which it was sometimes forced to flow back upon itself. Whoever has seen the slag drawn from a smelting furnace, and observed its progress, has seen an imperfect miniature of a lava flow.

As we sat watching this a happy idea struck me. I filled my pipe and lit it at Pélé's fire. This Pélé, you must know, is the goddess of this volcano, and is supposed to bathe in the fiery lake every day, and whom the natives always propitiated with offerings when they approached her dominions. Well, this was something to remember, this lighting one's pipe with liquid fire in the crater of Kilauea. After this we took out the melted lava and made impressions of coin in it; and I have yet seventy-five cents invested in that way which cannot be removed without breaking the specimens. There is one product of this volcano which should be specially described; it is called "Pélé's hair." It consists of fibres of lava composed principally of silica. They are as fine as fibres of silk, and almost as flexible. These are evidently formed or drawn out when a particle of lava is thrown high up and divides the different parts like those of a divided bead, drawing out this fine thread between them, from which it is soon detached and is blown away. Whenever two of these come together they become entangled, and then gather others to themselves, till finally they form quite a lock of hair all snarled up as if Pélé never used a comb. Of this we made quite a collection, and it is by far the most interesting lava product which I have. It

can be found in no other volcano, for in no other is there a spouting lake of pure lava whose particles thrown far into the air can alone form it.

After we had been watching this lava flow for half an hour or more, wandering about the border of it for some distance where it had congealed and ceased in its progress, and overlooking thousands of acres which it had lately covered, presenting the most desolate spectacle it is possible to imagine, the visible heat radiating from its whole surface, we observed that the wind had shifted more to the west, and indicated that we might possibly approach the most westerly lake should it change but a few points more. We accordingly started towards the foot of the cone, on the top of which this lake is situated, keeping just to the westward of the smoke and gas which came floating down from the volcano, to breathe in which was impossible. When we reached the foot of this cone we met another current of flowing lava even larger than the first, which we again stopped to observe. This point we found to be one thousand four hundred and twenty feet above the sea. We soon commenced the ascent of the cone, the base of which seemed to be a mile in extent, and was formed of recent lava which had overflowed from the top, and which had rushed down the declivity in most fearful contortions. Much of the way the surface consisted of a thin crust of lava from which the lava below had shrunk away, leaving caverns or open spaces beneath, of greater or less extent, so that care was necessary to pass over it safely. The guide went ahead, and although he was perfectly familiar with the ground he was constantly feeling his way and trying the crust with his staff, making short turns and detours. We followed closely in his tracks. Frequently a cracking noise would be heard as the foot of some one would break through the crust, when we would stop and look around to see what next. However, nothing serious occurred, and we at length reached the top, where we found a pile of loose lava thrown

up as if for a landmark. Here we sat down for another rest, and asked the guide where the lake was. He pointed in its direction, but we could not see its surface, though we could hear its surges beating upon the rocky shore like the waves beating on the beach of Lake Michigan. But little smoke was rising from the lake itself, but the radiated heat stood over it almost like a cloud. Beyond the lake, and separating it from the other and larger one, from which was the lava flow we had just witnessed, was what might be called a mountain range composed of high sharp peaks, columns, domes, and cathedral spires, from which more or less steam, smoke, and gas escaped; but the greatest activity was a little to our left above the head of the lake, and about a quarter of a mile away. There the energy was so great as sometimes to make the ground tremble where we sat. From many openings steam was escaping, ashes and scoria were thrown up, forming little cones around them, and from one Mrs. W. distinctly saw the flame issue. The reports from the escaping steam and gas were intermittent, though most of the time they were loud and clamorous. Imagine many high-pressure steam-engines of enormous power alternately puffing and blowing off steam, and you may form some idea of the sounds and even appearance of what was before us and close to us.

After we had rested, the guides made us understand that it was necessary to cross the lava bed before us if we would see the lake. This did not look inviting. The lava bed was about twelve feet below us and about three hundred yards across, and extended to the very brink of the lake. In many places the crust had fallen in and disclosed dark openings below suggestive of an unpleasant place to go to. But last May this was the surface of the seething lake itself, and how far down it was to the liquid fire of course we did not know. The guides saw that we hesitated, and to inspire us with confidence they both clambered down to the bench below and picked their way across to the edge of the lake, and

turned about and motioned to us that they could see it from where they stood. We did not object to their going, for if any were to be sacrificed to either curiosity or science, we thought the world would lose less in them than in us. Our courage, however, soon began to rise, and we motioned one of the guides to come and pilot us across; under his guidance we soon stood upon the brink of the awful abyss. Although it was not at the moment in an active mood, yet it was wonderful to look at. Our place was near the upper or west end of the lake. How far it extended east we could not see, owing to a bend which shut out the view perhaps six hundred feet, while it was about one hundred and fifty feet across, and about forty feet below us. We did not venture nearer than five or six feet of the edge, for it might be undermined and liable to drop into the gulf at any moment. The upper end of the lake opposite to us was very quiet, and covered over with a thin black crust, which was wanting a short distance below where the lava was boiling and surging, throwing the fiery spray to a considerable height as the waves broke upon the vertical shore. While we stood there the lava rolled up in a sort of wave from beneath against the rock at the west end of the lake near which we stood, which rose to the height of several feet, and curved over upon the crust below, which in almost an instant seemed fixed in its position by the formation of a crust over it, and so it quietly remained till we left. It was not deemed safe to go further to the eastward along the shore that we might see its extent, nor were we inclined to lean over the brink that we might see a few feet more of its boiling surface. That was the active part of the lake at that time, though, perhaps, in half an hour it might be spouting up jets to an indefinite height at the upper end, making more of Pélé's hair. No doubt the lake was unusually quiet at the moment we saw it, but it was a sight never to be seen elsewhere and never to be forgotten — a lake of fire and brimstone! There it was in very truth. The

rocks fused to the fluidity of water, and, like water, agitated as if by the wind, rolling in billows to the shore and breaking with a hollow reverberating sound. We did not tarry long, for the indescribable sensation of awe at what we beheld was mingled with a sense of fear that the place on which we stood might at any moment break away and become engulfed in the lake below. Although I learn that no accident has ever happened to any one of the thousands who have visited it, yet many narrow escapes have occurred. Mr. Austin, a sugar planter in the Hilo district, once stood upon the brink as we now did, when, observing some suspicious symptoms, he turned and fled just in time to get one foot on the ground beyond the rift, while that under the other sank away and was buried in the fiery fluid below! As changes are constantly going on all about these lakes of fire, there is always a possibility of one's being caught by them. Still, the experience of the guides may enable them to detect threatening symptoms which would escape a stranger. There are many stories of narrow escapes which are perfectly reliable, and yet the fact remains that no one has ever been seriously injured, though many have had the soles of their shoes badly burned.

We observed that the guides were no more inclined to go to the brink than we were, and it was very manifest that they were willing to retire as soon as we were. We finally took a last look at this burning lake, saw another wave dash its fiery spray into the air, which went up like water and fell back into the lake like shot; when we turned our backs and hastened away with accelerated steps, and were soon back upon our old seats at the highest point which we reached in the crater by the pile of stones. We found the altitude to be fifteen hundred and twenty feet, showing that this cone was just one hundred feet above the level of the floor of the main crater, or rather, I should say, from the point where we commenced the steep ascent.

The other and larger lake we could not visit. It was

entirely covered with the thick sulphurous smoke, and, indeed, it was barely possible to go where we did, for we had been in its very skirts, where the smell of the sulphur was very perceptible. The change of the wind a single point would have driven us back in a hurry. Besides the eruption was in the way of its approach, and it would have required the utmost care to have gone near it, even with the most favorable wind. But then we had seen one lake of fire, and that is more than but a very small portion of mankind can ever see, and it would have been substantially a repetition of what we had already seen. Still, had circumstances permitted, we should have taken another hour and paid our respects to it most gladly, for we had come a great way to see Kilauea, and desired to see as much of it as possible.

When seated upon the top of this cone we had a fine view of the surrounding walls which inclose the crater. Almost everywhere they were absolutely vertical, except at the place where we entered, and such a sight of itself is worth a long journey. It seemed as if the bottom of this part of the world had fallen out, and it had settled down bodily to an indefinite depth, and then had been filled up by successive overflows of lava, which process was then going on right before our eyes. In depth it is ever varying, — at one time settling away and then again filling up. Forty years ago it was one thousand feet deep, and now, at the most, it is from four hundred to six hundred feet deep. Within the next year it may settle back to its old level, or even lower. Every day produces some change, and so no two visitors see it alike, even though but a short time intervenes between their visits. He who visits it next month may find a lake of fire where we passed over the cold lava, or he may pass over the cold lava where we saw a burning lake; only this he may depend upon, that he will find one or more lakes somewhere near where we saw this, unless some great outside eruption should occur, as in 1840 or in 1868, which may draw off the

lava, in which case he may have to wait a few months for the lakes to refill. Still the time must come, though it may be long ages in the future, when the lava will burst forth for the last time; when Pélé's fires shall wane and only smoldering ruins shall emit feeble columns of smoke and gas; and finally her fires will go out, when Kilauea will become what Halakala now is, an extinct volcano.

At length we turned our faces towards home and resumed our journey. We found it as difficult to pick our way down the cone as we had to ascend it. We reached the bottom at the very point where we had commenced the ascent,—where we had met the second lava flow. I was following close after the guide, and the first I knew he was leading me exactly across the stream where we had seen it flowing but an hour before. It was hot enough to make me dance, and a little way to the right I saw the red lava flowing out from under the crust on which I was walking. The guide was already safely across, and I motioned to those behind me to go around, which they did; but I did not stop to argue the case at all, for it seemed to me the crust was already bending and swaying under me. I did not run, but I walked gingerly and lightly, and lively too, and was not sorry when I struck the old lava beyond, which was cold and firm and assured me that all was well. The guide did not look as if he thought there was anything the matter, and as I could not talk Kanaka and he could not understand English we did not converse on the subject, but if I remember rightly I did express myself to those who could understand me.

We sat down again to observe the lava flow for a while, for doubtless it was the last we should ever see, and then resumed our journey directly for home. We arrived at the end of the lava about one P. M., and although we had been over six hours in the crater, with a hot sun pouring upon us all the time I felt fresh and strong and able to walk ten miles further, if need be; but so soon as I commenced that

terrible ascent I began to weaken. Mrs. W. kindly remained behind with me, under the pretense of picking ferns, of which she made a fine collection, and our own guide brought up the rear. I walked and climbed as slowly as possible, and every few minutes stopped and rested, but it was about the hardest task I ever went through. It took me an hour to go up, and when I arrived at the top I was fairly exhausted, and had to take the arm of my friend to reach the house, and during the whole afternoon it seemed impossible to inhale sufficient oxygen to supply the demand of the system. The sun was beating down fiercely upon us all the time, and, indeed, had been the whole day, and heavy weights are not exactly adapted to climbing high precipices in a hot day.

After dinner I walked out to examine the fissures from which the steam was escaping in many places. On this high table-land outside the great crater the surface is cut up with cracks and fissures, some of which extend along the surface for a considerable distance and others but a few feet. Some are a foot or two wide and others but a few inches. From these jets of steam issued, not with absolute regularity, but somewhat intermittent, still in no place does the steam entirely subside. This escape of steam is very abundant, in some places more abundant than in others. Arrangements are made for condensing this steam for domestic use, and when we were there it furnished the principal supply, and but for the vegetable matter taken up from the thatched roof on which it was condensed, which gave it a wine color, it would have been very good. Not a trace of sulphur could be detected in the steam or water, and yet but a little way off were great sulphur banks, condensed from gases escaping through similar openings. Much larger openings than these are frequently formed by earthquakes in the vicinity, but from these large crevices, frequently many feet across, steam rarely escapes. Stock is frequently lost by falling into these crevices or deep pit-holes, formed

in a similar way. Indeed, I think it safe to say that this whole country is pretty well shaken up, and, at first sight, one would say, not a desirable place for a permanent abode.

The next morning at 6.40 we were in the saddles and faced for Hilo. I, being anxious to see how the invalid was getting along, let my white nag tumble along at a pretty good pace, leaving the rest of the party with the guide. I made the thirty miles — I think the distance considerably more if we straighten out the numerous kinks and windings in the road — in seven hours and fifty minutes, traveling time, and found all in better condition at Hilo than I expected. At the Half Way House I got an ōo, one of the choice royal birds which furnish the rich yellow feathers of which the gay cloaks are made, — in former times exclusively for the chiefs or royalty itself. But as my design in this paper is only to treat of the volcanoes of the group, and the mode of getting to them, I must forbear to introduce other subjects.

As germane to my theme, however, I may mention that the next morning about seven o'clock, as I lay in bed recalling what I had seen of Kilauea, we had the experience of a very respectable earthquake, for so it was called by those who had observed such phenomena there for more than forty years. Although it was my first experience of the kind, there was no mistaking it from the very beginning, so unlike was it to any other sensation I ever experienced. It lasted about three seconds, but that seemed long enough while it was shaking things up lively around the room. However, it was a small affair for Hilo, as I could only learn of one stone wall that was disturbed by it, and from that but a few stones were thrown down. "Well," said I, "may we not go home now? We have seen a hurricane at Honolulu, a tidal wave of large dimensions at Haiku. We have seen a volcano in eruption, and watched the sluggish current of the lava flow. We have seen the burning lake of Kilauea, and we have had the experience of a veritable

earthquake. Surely this little kingdom, however respectable it may be, can have nothing more to show us, in this line at least, unless Mauna Loa should awake from its slumbers and give us one of its grand exhibitions, which we dare not hope for." However, three days later it was reported that smoke was ascending from its top, which is nearly fourteen thousand feet high, and over sixty-five miles distant, and in plain view of Hilo, from which it seems to be but a few miles away. That night all eyes were turned to Mauna Loa, but no light was visible. All was darkness and silence, and so it was concluded that the smoke was from some great fire on the other side of the mountain, and we despaired of seeing any new phenomena from that volcano. In 1868 the north side of this volcano burst open, and the lava flowed down in an immense volume in the direction of Hilo, and only stopped when it had reached to within six miles of the place. We may well imagine the despair of the inhabitants before its current was arrested.

XV.

SURF BATHING AT HILO, ON THE ISLAND OF HAWAII.

NOTES OF TRAVEL, 1878.

A FEW days after my return from the volcano, a favorable sea occurred and we witnessed that most extraordinary sport — surf bathing. I venture to describe it, especially as I have never met with a description of it which was not erroneous, and showed clearly that the author did not accurately observe or comprehend it. Lieutenant Wilkes describes the bather as coming in *on the top of the wave.* This would be an utter impossibility, for should the bather once get on the crest of the wave, he would, in spite of all human effort, be thrown forward and be submerged immediately.

The wind was light, but immense seas were rolling in through the broad opening into the bay in front of which was our place of observation. On our left was an area covered with large volcanic rocks, extending for almost half a mile into the bay. Near the shore the tops of many of these appeared above the water when it was still, the depth of which gradually increased sea-ward. As the big seas chased each other in from the open ocean the west end first reached this rocky bed, and the instant the bottom of the wave met this obstruction, its rotary motion was checked, and immediately the comb on the top was formed so that the foamy crest seemed to run along the top of the wave from west to east, as successive portions of it reached the rocky bottom. By this, also, the easterly portion of the wave was also retarded in its progress towards the shore, while to the west it dashed forward in its unchecked career. The effect of this was to bend the wave into a crescent form.

On our left, over the rocky bed, perhaps half a dozen of these huge crested waves would be chasing each other, the most advanced being the least perfect in form, till finally they became quite broken down and dissolved into a great field of white foam, in the midst of which the vast volcanic bowlders showed themselves.

Three bathers appeared, stripped to their breech-cloths, each with his bathing-board, which was about three quarters of an inch thick, seven feet long, coffin-shaped, rounded at the ends, and chamfered at the edges; it was about fifteen inches wide at the widest near the forward end, and eleven inches wide at the back end. When I examined them carefully after the sport was over, I observed that one of these boards was considerably warped, but its owner said that did not injure it for use.

The bathers started out, their boards under their arms, in this seething sea of foam, wading among the rocks where only an expert, familiar with the ground, could avoid being dashed to death in a moment, — sometimes wading, sometimes swimming, and sometimes stopping on high rocks to steady themselves and take advantage of the situation, till they reached the regular wave formations, though these were still badly broken up, when they struck out on their boards, diving under the waves as they met, making their way rapidly outward and towards the east end of the breakers. Here they remained floating on their boards till an unusually large and regular wave approached and commenced breaking, its great foaming crest arching over apparently several feet, the milky foam falling upon the front declivity of the wave several feet above its base. This was the condition desired by the surf-bather. One instantly dashed in, in the front of and at the lowest declivity of the advancing wave, and with a few strokes of hands and feet established his position; then, without further effort shot along the base of the wave to the eastward with incredible velocity. Naturally he came towards the shore with the body of the wave as it advanced, but his course was along

the foot of the wave, and parallel with it, so that we only saw that he was running past with the speed of a swift-winged bird. He kept up with the progress of the breaking crest which moved from west to east, as successive portions of the rest of the wave took the ground, as I have above described.

So soon as the bather had secured his position he gave a spring and stood upon his knees upon the board, and just as he was passing us, when about four hundred feet from the little peninsula point where we stood, he gave another spring and stood upon his feet, now folding his arms upon his breast, and now swinging them about in wild ecstasy in his exhilarating flight. But all this must be enjoyed rapidly, for scarcely a minute elapsed from the time he started till he was far away to the right, where he abandoned the exhausted wave, and with a few vigorous strokes propelled himself into shallow water and waded ashore with his board under his arm; he came up to us as calm, at least, as those who had witnessed his wonderful feat.

I have followed the first who started, without noticing the others, for only thus could I give a clear idea of the exhibition. But the others were not idle in the mean time; for the last of the three had taken his wave before the first had concluded his course, but the progress was so rapid and the time so short that I glanced at the others and confined my study to the first.

But these feats were several times repeated by all the bathers, and thus I was enabled to make the study much more complete than was possible by observing a single exhibition. Not every attempt to take the wave was a success. Several times the bathers seemed to be drawn up the front acclivity of the wave till brought within the reach of the comb, when the attempt was instantly abandoned; they dove under the wave and soon came up quite beyond it, and waited for another on which to make the passage.

The bathers themselves were unable to explain what it was that propelled them with such astonishing velocity

along the foot of the wave, and I have conversed with a lawyer of distinction now practicing in this country, who was born and brought up at Hilo, and was himself a successful surf bather. He could only say that the propulsion was by the action of the water, which, indeed, was very manifest, but *how* he would not venture an opinion. The inclination of the board to climb up the acclivity — if, indeed, such is the case — when the wave is rolling towards the bather, and so producing a current downward, seems contrary to what we should expect. This propulsion parallel with the wave, I think, only occurs when a comb is breaking on the top of the wave, and then it is that the foot of the wave in front is most distinctly defined, while the unbroken swell is very irregular and much deformed. That there is a rapid current rushing along at the foot of the wave at right angles to its general course I cannot believe. A block of wood thrown in where the bather started would no doubt simply rise up over it and be left behind to again surmount the succeeding wave, much less would it dart off almost like a flash and maintain its position in front of the wave. The only solution to the problem which I will venture to suggest is, that by placing the bathing-board at a certain angle to the direction of the moving water in the wave an impetus is given to it in a direction not in accord with the impelling force, as by trimming the sails of a ship so that the wind will strike them obliquely the vessel is propelled in a direction different from the course of the wind. If the results were more marked than we should expect from the cause suggested, I may say that we are not sure that we are acquainted with the force and direction of all the currents which accompany a wave of the sea. At all events, I hope that what I have said will induce others more competent to study the subject, and give a more satisfactory explanation of the striking facts which I have detailed. I do not think it will prove more difficult of explanation than is the action of the boomerang from the hands of the Australian native.

XVI.

LETTERS FROM LOW LATITUDES.

In the winter of 1872 Judge Caton visited the Isle of Cuba, returning by way of Florida. The incidents of the trip and the impressions made upon him furnished material for a series of informal letters, which he sent to the "Ottawa Free Trader," for the entertainment of his neighbors and friends. His observations, however, led him to cover ground in his letters of more than local or temporary interest, and the series is here reprinted, with only such slight corrections as were necessary in transferring the letters from the columns of a newspaper to the pages of a book.

I.

FROM NEW ORLEANS TO THE HAVANA. — HARBOR REGULATIONS. — LANDING.

HAVANA, Cuba, *Jan.* 20, 1872.

AT six o'clock on the evening of the 16th of January we went on board the steamer "Liberty," then lying at the wharf at New Orleans, bound for Havana. Besides my own family our party consisted of S. M. Turner and wife, of the Tremont House, Chicago; Mr. Preston, of Evansville, Indiana; and Mr. Kennedy, of St. Paul. Thirty minutes later the steamer cast loose and we swung out into the rapid current of the Mississippi, and went rejoicing on our way towards the Gulf of Mexico. The evening was mild, but dark, so that the street lamps of the city made a brilliant display, especially as we passed the streets at right angles to our course, showing momentary vistas between the long lines of light, which, as they receded in distance, seemed to converge till they met at some far off point where they were

but specks of light in the profound darkness. When we had reached the city limits, standing on the quarter-deck of the steamer, the crescent of the city was brought most distinctly into view, as prominently marked by the lamps bordering the margin of the river. Soon, however, these were shut out, one by one, by the intervening point, as the bend of the river turned our course towards the south, and then the darkness of the shore-line was only relieved by the lights in the negro quarters, the sugar-houses, then in full operation, and the mansions of the planters, as we rapidly passed them with the descending current. The echoes of the adjacent forests were occasionally awakened by the loud whistles of passing steamers, whose lights cast a momentary glare upon the troubled and turbid waters.

At last, when wearied with the scene of darkness without, we retired to our berths, Mr. Turner and myself desiring to be called before we should pass the bar. Forgetfulness soon came, and I remember nothing more till an exile from Africa rattled at my door. I dressed as hastily as possible and rushed on deck, just in time to see the pilot's boat shove off, and on looking back saw the buoy lights marking the channel across the bar, nearly a mile astern. We were already on the heaving bosom of the Gulf, as was manifest from the gentle rocking of the ship, although there was not a breath of air to disturb the waters. It was now about four o'clock in the morning, and was still very dark, so I went back to my narrow bed to make amends for my broken rest.

The morning was bright and fair, with a gentle breeze on our port bow, but there was too much motion to suffer more than half the passengers to come to the breakfast table. We expected to arrive at Havana in forty-eight hours, but soon the irregular working of the engine and the decreased speed of the ship told that something was wrong. We had lost one wing of our propeller, and, as she was very lightly loaded, whenever we passed over a big wave the crippled

propeller was thrown out of water, and we were obliged to work a low head of steam, with extreme caution on the part of the engineer, lest we might become disabled altogether. The weather was very pleasant and the wind light, which drew more ahead, so we had to take in all the canvas.

The second morning the weather was still pleasant and the wind light, but the seas were heavier, rolling on from the east, the result of a late blow. This sent more of the passengers to their berths, and so the day wore away with increased rolling of the ship. Fortunately nearly all were asleep when the heaviest motion was experienced, as the captain said the ship nearly stood on end during some of the time that night. In the morning the seas were not so high, but still there was motion enough to satisfy all. The wind was still a moderate breeze, but the heavy seas compelled us to reduce our speed to less than four miles an hour, but then we were in the Gulf Stream, which was helping us along three miles an hour. At eight o'clock on the evening of the third day the Moro Light was reported, and all who could assembled on the forward deck to watch for the beacon which should proclaim land once more.

One of the uncivilized regulations of this island is that no vessel shall enter the harbor or depart between sundown and sunrise, no matter what the emergency. We can only explain this by the same reason which induces them to use the crooked limb to stir the ground, instead of the improved plow, or to pack their green fodder on mules or mustangs instead of hauling it on wheels. In conformity to this absurd regulation the ship was hove to under sail, the fires banked, and we went to our bunks, the lights of the city shining before us, resigning ourselves as best we could to another night on the water, thanking the stupidity of some people for the privilege.

When I heard the engines started in the morning I got up and dressed myself as soon as possible and went on deck, in the gray dawn. I saw we were slowly steaming to the

mouth of the harbor, about three miles distant to the southwest, and I looked for the first time, and with interest, on the Moro Castle at the south of the entrance, and the opposite fort, and the city stretching away along the shores of the Gulf to the west.

On the whole our passage had not been a particularly unpleasant one, although a day longer than anticipated in consequence of our crippled propeller. Most of the passengers had suffered from seasickness, and some very severely. It was a little remarkable that both Mr. and Mrs. Turner, for the first time on salt water, were entirely exempt from the least sensation of sickness, even when the ship was rolling the heaviest.

As we approached the mouth of the bay, which is not more than one sixth of a mile wide, guarded by solid rocks on either side, daylight was rapidly advancing, and just as we reached the line between the capes the flag at the castle was run up, the signal that it was sunrise and we might enter, though they evidently anticipated the proper time by a few minutes, rather than throw a shot across our bow. In a minute more we were in calm water, and the engines stopped to receive the pilot on board, whose business it was to take the ship to the anchorage assigned her. I omitted to state that as soon as possible after the sunrise signal had been hoisted another signal, announcing that an American steamer was coming in, was raised, and immediately after appeared the appropriate signals for two ships, which, like us, had been laying to outside, and were now approaching the entrance under full sail. Our pilot took us about three fourths of a mile up the bay, and anchored us nearly half a mile from shore. In a few moments an officer came and placed several police on board, who commenced pacing the decks in an inoffensive way. After a while another boat arrived full of officials, to one of whom our purser furnished a list of the passengers and our passports, with which he departed, and we went to breakfast with the comfortable as-

surance that the order permitting us to land might arrive in two hours or in ten, depending very much on the state of digestion of the proud officer whose signature must be attached to the order. Good fortune attended us. Happily he was in amiable mood that morning, and at ten o'clock the official boat was seen approaching, followed by a swarm of wherries anxious for passengers or baggage to carry ashore at one dollar and fifty cents each. Here, then, had been at least forty officers employed from sunrise till ten o'clock in going through with the forms required to land a dozen or more who had been beating about all night in the Gulf Stream, in conformity to a useless custom observed by no other civilized (?) nation, so far as I know. And now we must clamber down the side of the ship into those little wherries and be rowed half a mile to shore in the broiling sun, when, had we been in a country where there were three grains of common sense to the head (official), and the people not frightened to death at their own shadows, the ship would have passed directly to the dock, and all might have been comfortably ashore in sixty minutes from the time we entered the bay without disturbing the repose of that corps of officers whose services were brought into requisition.

Mr. Tucker had a letter of introduction to Colonel Lay, the proprietor of the Hotel St. Isabel, and this determined us in our choice. A Spanish Jew, who spoke fair English, and who proved to be about the smartest and most knowing man I saw on the island, hailed me by name, and said rooms were all ready for our party at the St. Isabel. He was soon on board gathering our baggage, which he hustled with ourselves into his boat, and away we went to the custom-house for inspection. Due care and politeness, and no unnecessary rigor, was observed in the inspection, which *Angeleno* (so I called him for short) intimated was all due to the favorable terms existing between him and the inspector, and that we were most happy in having him for a *vola*. The inspection over, the trunks were relocked

and we were *vised* to permit us to inspect the beauties of Cuba.

II.

THE BAY OF HAVANA. — STREET CONVEYANCES: VOLANTES, CABS, AND STREET RAILWAYS. — TRANSPORTATION OF GOODS. — THE GRAIN OF THE COUNTRY.

Unusual things and scenes and actions always interest me, though they may not be of great intrinsic importance. There are so many of these to an American in Cuba, that it is impossible to mention them all. If some have become familiar to us by the observations of others, it is surprising to observe how many have been omitted. I shall only mention such things as I had not learned from the statements of others, presuming that to a certain extent they may be new to my readers.

The bay of Havana widens out soon after the entrance is passed to an extent of several miles, and is, approximately, in a circular form. So far as I could observe, the shores are high, with deep water, where docks might be built miles in extent. The city is mostly built on the west side of the bay, while the Moro Castle and the most formidable fortifications are on the east side. With these facilities for affording berths at the docks for four times the number of vessels which actually enter the harbor, the entire extent of the docks is not more than a third of a mile. This space is filled with sail vessels as closely packed as possible, while all the steamers are anchored off in the bay and have to be loaded and unloaded by lighters. It is not difficult to see how great a tax upon commerce this imposes. But then it affords work for watermen and stevedores.

The means of personal transportation about the city are volantes, cabs, and street railways. The former are the most stylish and aristocratic. They are constructed with two very strong wheels, about five feet six inches in diameter, and shafts fifteen feet in length, a seat for two, covered

with a calash top. One horse is in the shafts, and another at his near side is attached to the vehicle with a whiffle, the centre of which is under the near shaft, well back, and round leather traces about twelve feet long. On the near horse is the driver, who holds the horse in the shafts by a check rein about eighteen inches long. The long traces of the near horse allow him to go so far in advance of the off as to bring the head of the latter even with the saddle of the rider. The whole establishment covers a space of about twenty feet in length. The driver, or rather the rider, is generally a negro, dressed in a sort of livery, the most conspicuous parts of which are the boots, or rather the leggins for the feet, consisting of slippers and stockings, showing the black skin of the wearer glistening in the bright sun, when his ablutions have been sufficiently thorough to allow the skin to be seen. The leggins come up to the thighs, greatly enlarged towards the tops, the fronts of which project six inches above the back part, and are composed of stiff patent leather. The driver's heels are armed with long silver spurs, which jingle terrifically whenever he attempts to walk — rather a difficult job in such a gear.

Such are the private carriages of the higher orders of ecclesiastics and many of the old and wealthy Spaniards. In a northern city one would attract more interest than a whole caravan of wild animals. It is with the greatest difficulty that a volante is got around the corners of the narrow streets of the city, which are usually not more than from fifteen to twenty feet wide. When we remember how many ridiculous and inconvenient things are tolerated in the States in obedience to the commands of fashion, we should not laugh when we see such ridiculous things kept in use for the sake of their aristocratic appearance. This, however, must be said for them, that in a very rough road they are the easiest vehicles I ever rode in, as I shall have occasion to mention if I ever get to our visit to the caves at Matanzas.

The cabs are low four-wheel vehicles, with calash tops

projecting far over the seat, which will accommodate two. They are admirably adapted to the purpose designed. In them one, two, or even three, if they wish to crowd in, may be taken to any point in the city within a mile for two American dimes, which constitutes almost the only small change in use in the city. The drivers are civil, and I saw no attempt at imposition or overcharge. The supply of these cabs is very abundant. All of the horses found in the cabs and volantes are scrawny mustangs, some in good condition, while others fairly stagger as they go; but even these by a cruel application of the whips are made to drag along at a tolerable pace. I saw some fine horses attached to private carriages of modern structure, but more than ninety-nine in the hundred of all the horses I saw on the island are such as I have described.

There are two lines of street railways in Havana, extending about three miles out of the city. The cars are comfortable, much like those in northern cities, except that a partition runs through them. In the front apartment white passengers travel, while the blacks occupy the rear. They are drawn by three mustangs, arranged in a spike team. Fare one dime, for a longer or shorter ride.

Goods are transported about the city on short, broad drays, drawn by small-sized mules, which, however, manage heavy loads. Ox teams, also, are much used for city hauling. The yoke is attached to the horns in the old Spanish style, and at first induces the belief that it must be very painful to the animal, although this impression is at least modified upon a careful observation of them at work. I have conversed with several Americans on the subject, and the testimony seems to be that a pair of oxen will draw a heavier load when thus geared than when yoked in our mode; but that they last but a short time, two or three years being the extent of the working life of an ox. The work oxen are short, heavy bullocks, and kept in fine order by high feed. They are driven with rope lines passed

through the cartilage of the nose. This is yanked and pulled in a most barbarous way by the driver, especially in backing. They are never broken to that docile obedience which is usual with our oxen. If the driver wishes to turn the oxen short round, he goes in front, takes hold of the lines three or four feet from the nose, and pulls them around, and so he will pull straight ahead when he wishes them to start a heavy load.

The grain fed to oxen is native corn, which is brought to market covered with the husk, and sold at four dollars per thousand ears. I could learn of no other mode of estimating corn. The ears average six inches in length, rather large for the length, a hard, round grain of a deep yellow, what we call the flint corn. I was told it matures in three months from the time of planting, and that several crops may be raised in a year on the same ground. Judging from the fields I saw I do not think the produce is more than half or two thirds as much per acre as that raised in our country. Corn is extensively sowed for soiling purposes. It is cut for this purpose when in the silk, and is brought to market green, without any curing, generally packed on mules or mustangs. It would be an amusing sight to our boys to see a dozen or twenty of these little stacks of corn-stalks, quite covering the little animal, the sides sweeping the ground, as if moving by their own volition, only the cord which attaches the head of one mule to the tail of another visible. In this manner the fodder for daily consumption in the city is brought in. In riding through the country one sees some corn-fields with the young spears just breaking the ground, and others in every stage of progress to complete maturity, and so must it necessarily be when each day must supply the requisite amount of fodder. To all appearances the corn for the table is of the same variety as the general crop. I did not test its quality, but it is probably inferior to our sweet corn which we consider such a luxury in its season. I have procured a couple of ears which I propose to plant this season.

I observed no field of either wheat or oats, or indeed any other kind of grain but corn. I saw no meadows for hay, but I saw a few bales of hay on the docks brought from the States. Most of the flour used is brought from the States, the tariff on which when brought in American bottoms is six dollars per barrel; if in Spanish bottoms, it is four dollars per barrel when brought from foreign countries, though it is considerably less when brought from Spain. I heard Americans complain bitterly of this enormous tariff, and of this discrimination; but it was very easy to silence them by showing them that we charge full as high a duty *ad valorem* on the sugar raised in Cuba, and even a much higher rate on many other articles produced in foreign countries. In fact, if we compare our tariff duties with those enforced in Cuba, ours will be found to be the most oppressive to the consumer at home, to say nothing of its effect on the foreign producer, who has just the same right to complain of us that our wheat producers have to complain of the tariff laid upon their flour.

III.

SHOPPING IN THE HAVANA. — NARROW STREETS. — BUYING A HAT. — A SPANISH INNKEEPER. — RELIGIOUS SERVICES ON A MAN OF WAR. — AN AFTERNOON DRIVE.

Among the first discoveries made in Havana was that stove-pipe hats were an unmitigated nuisance, and among the first excursions made was one in search of a Panama. In this pursuit all the gentlemen of our party sallied forth in a body, heroically declining the services of Angeleno, who was always ready to go shopping with every one, no doubt realizing a commission on all the goods sold under his patronage, — which, of course, the purchaser had to pay for in the price of the goods. In truth we were, at that early stage of Cuban experience, in some perplexity whom to trust: for while Colonel Lay was quietly cautioning one of our party not to trust the Jew any further than we could see

him, for he was the greatest liar on the island, the wary Israelite was gently whispering into the ear of another that the proprietor of the hotel knew but very little of things in Havana, and was sure to mislead us in anything he might tell us, — in fact, that not the least reliance could be placed on any thing that he might say, — indeed, that the hotel would go to the dogs directly but for the good offices he was enabled to render the guests, out of pure love for them, and a desire to make them happy and prosperous; while at the same time he presented a bill for his disbursements in getting us ashore, which we afterwards learned was fifty cents a head more than the actual cost. I say, in this conflicting state of our information we were not a little perplexed, and so concluded to depend on our own resources to make ourselves understood and avoid being cheated. To start with, we found some difficulty in getting along the sidewalks, two feet wide, crowded with people, while the streets were crowded with carts and cabs, the wheels of which were grating against the curbstone. I have heard it said that it required more talent to cross Broadway in a busy day than to be President of the United States; but that is nothing to footing it for one block in the streets of Havana. To pass on the sidewalk one must step on to the carriage-way, where nothing but the dexterity of a dancing master can save one from being run down by some cab or cart, or, worse than all, some volante hurried along by a booted negro whose spurs are jingling, and whose whip is constantly flourished in a most lordly way, all the while cracking like a volley of pistols.

From this you will appreciate why it is that ladies never walk the streets in Havana. But more than this, when they go shopping they do not even go into the store, but remain in the cab or volante, where they are waited upon by a clerk with such goods as they may desire to inspect. This, of course, occasions an intolerable obstruction in these narrow streets. But such is fashion here, originating, no doubt,

in the lassitude engendered in such a climate. So little do ladies expose themselves to the sun in Havana that the use of the veil, as our ladies use it, is unknown; although at church or opera, and the like, they wear a lace shawl thrown loosely over the head in place of a hat. When our ladies appeared out-of-doors with their parasols, the natives looked with more curiosity, and astonishment even, than when they saw me sauntering about with my Shaker pipe in my mouth, where choice Havanas could be had for five cents each; and when I sallied out to get a green veil for one of the ladies for use on shipboard, and made many inquiries in large establishments, assisted by an American resident in trade there, no such thing could be found or heard of, so that I put up with a substitute in a yard of thin green crape.

I have been a long time in getting to the first hat store, but I have tried to explain, by the way, some of the difficulties we had to encounter on the road. At last we did accomplish three blocks in safety, and reached the first place which Colonel Lay pointed out. With all his ignorance the shop-man could understand *Panama*, and, looking at my dilapidated hat till compassionately comprehending the situation, he soon covered the counter with every variety of the desired article, from three dollars to three ounces (fifty-seven dollars), which was the highest price of any I met with. As figures are the same in all modern nations, and as they understand *dollar*, it was easy to negotiate. Of course, we did not purchase at once, but went from shop to shop, pushing our inquiries and enlightening ourselves upon trade and commerce in a small way in the West Indies. However, I may say in conclusion of this subject that the first we called upon finally got our money, as we were satisfied he offered the best bargain.

Our hotel was built by a rich old Spaniard, long years ago, for his private residence, with an open court twenty feet square in the middle, surrounded by corridors. He was once a water-carrier in Spain, where he prospered amazingly,

and finally came to Cuba, where he made his fortune. Proud of his lowly beginning, and to commemorate it, in the centre of this court he erected a fountain, surmounted by a statue of himself with a great water pitcher in his hand pouring water into a dish for a customer; and there he stands, half buried in flowering shrubs and vines, sprinkled by the spray of the fountain. Although built with the solidity peculiar to the old style of architecture, the hotel is now becoming dilapidated, and it requires an expert to shut or lock a door or window which once would have defied a band of robbers. The bedsteads were all of iron, the mattresses hard, and the covering, of course, very light — a single sheet being found quite sufficient for comfort, although the residents complained that it was unusually cold, as a north wind prevailed during most of our stay.

On Sunday morning the inquiry was for a Protestant Church, when we were informed that such a thing was not tolerated on the island, but that on board the "Kansas," an American man-of-war lying in the harbor, we could attend the Episcopal service, where we would be likely to meet most of the American visitors in the city, and that the ship's boats would be at the Derrick Wharf at eleven o'clock, to take on board such as chose to attend. At the time appointed we were at the designated place, and soon the boats arrived, and it was very pleasant to receive a polite invitation in our native tongue, from a very courteous *middy* in naval uniform, to be seated in the boat at the stern, over which our own loved flag was floating. Eight lusty tars soon brought us to the ship, where we were received by the officer of the day, who conducted us to the quarter-deck, which was covered by a broad awning and provided with comfortable seats. About thirty of our own countrymen and women were already assembled, who looked a kindly welcome as we joined them. Here, under our own flag, although in a foreign land, we stood, as it were, on our own soil, where we might worship God in our own way, with

none to say Why do ye so? We felt that the mighty arm of a great nation that recognized us as its own was stretched out for our protection, and we saw before us and around us brave men and ample means to shield us from all harm. When we meet them in foreign lands we love our countrymen and our country defenders more than we do when we are at home. Indeed, they seem as real brothers then, and as such we feel an affection for them.

The services were well conducted by a young man who had been sent as a missionary to Havana with the hope that he would be permitted to open an Episcopal Church in the city, but permission had been denied him, and by invitation of the naval officer in command he holds regular services on Sundays on the decks of our war vessels, where all who choose attend upon his ministrations, and are brought and returned in the boats of the squadron. As every American must be, I am proud of our naval officers here. But more of this when I come to speak of our subsequent visit to the fleet.

We took an early dinner at five P. M., and then drove out to the eastern part of the city and beyond the Parade Grounds. We were soon beyond the narrow streets of the old city, and in the broad avenues separating the large parks called the Parade Grounds, in the upper part of the city. These are beautifully situated, and most of them well inclosed, but not improved. They may be looked at, but are not to be walked in. Indeed, there are no walks or drives in them, yet the streets and avenues around them are well paved. We soon passed by these into a magnificent avenue of over a mile in length, bordered on either side by large trees, beyond which are several very fine lawns and gardens. At the end of this avenue is the Captain General's palace.

The avenue was full of all sorts of vehicles, driving to and fro, the Cuban ladies always bareheaded, although it was so cold that I found an overcoat comfortable. They have so little cold that they seem to have no idea of protecting themselves against it when it does come.

After taking a few turns in this avenue, much interested in observing the great variety of carriages and people, and some displays of police authority, which nearly frightened some of our ladies into fainting, we turned towards our hotel and retraced the narrow streets of the city by gas-light, gave our cabs a dollar each for the hour's service, and discharged them.

IV.

AN EARLY START FOR MATANZAS. — THE COUNTRY FROM THE RAILWAY. — PALM-TREES. — MATANZAS. — A WALK THROUGH THE TOWN.

At four o'clock in the morning a servant thundered on the door, and in execrable Spanish (allowing me to be the judge) announced that it was time to be stirring if we were to take the morning train for Matanzas. When one is traveling for pleasure, we do not always *see it* when suddenly awakened from a sound sleep at that unseemly hour, and my first thought was that Matanzas and the cave might go to the dogs their own way for all me; but when I became fully awakened, I realized that the ways of a traveler must often be hard, and that if he will sacrifice the comforts of a quiet home to see people not half so important as those he has left behind, it is but a just punishment that he be dragged out of bed at any hour of the night, and hustled into strange streets, among strange people, to go to see strange places. So I quietly submitted to the necessities of the case, and resignedly proceeded to make my toilet. Not a crust could be found to brace the stomach for a four hours' ride, and I thought some faces were longer than usual when we assembled in the old stone hall leading from the inner court to the street. A whistle is the universal call for everything and everybody in Cuba, and as a whistle is the same in Spanish as it is in English, so far as I could discover, to that extent we could all speak Spanish. The accompanying gesture, however, is the reverse of that with us; for if

you wish to motion any one to come you must wave the hand from you instead of towards you, and reverse the motion if you would have him go away. Several cabs were standing about, both drivers and mustangs evidently sleeping quietly in their places; but a few sharp whistles aroused them, and three cabs, which accommodated the seven composing our party, served us, and at sharp five we started for the dépôt, a mile distant. It was very dark, and the narrow streets seemed lonely and deserted as we rattled over the rough pavement with a noise that might have been heard half a mile. However, as we emerged from the old city, in the neighborhood of the market, activity and lights were abundant, for the supplies for the city were just then being placed in tempting order to invite purchasers. At length we arrived at the dépôt and were pointed to the ticket agent's window. There the word *Matanzas*, the exhibition of fourteen dollars, and the elevation of seven fingers conveyed all the information necessary to procure our tickets, which were soon passed out. A sable youth standing by pointed the way to the cars, in which we were soon seated; but none too soon, for in three minutes more we started. The cars were very plain, old, and by no means neat. The seats were furnished, back and bottom, with cane splints, which undoubtedly gives the most comfort in this hot climate. The windows were provided with lattice shutters to keep out the sun and rain, but no glass.

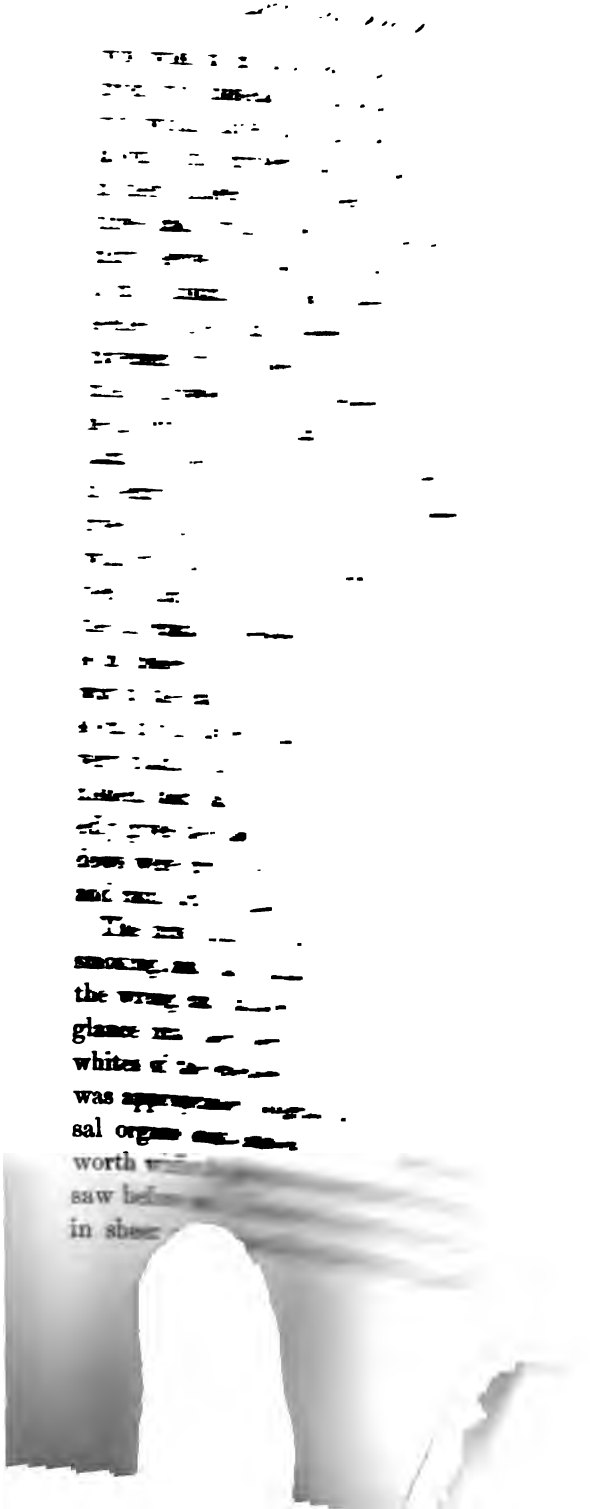
The first thing noticeable was that nearly every one was smoking, and this induced the suspicion that we had got into the wrong car, although it was the last one on the train. A glance into the other car corrected this supposition, for the whites of the eyes set in black surrounding showed that that was appropriated to gentlemen of another color, and the nasal organs soon conveyed an admonition that it was not worth while to penetrate too deeply into the festive circle I saw before me. I returned to my seat in the back car, and in sheer self-defense filled my Shaker with genuine Illinois

tobacco, and soon succeeded in overcoming the fumes of the Havanas. In a moment a dozen cigars were offered me, but I politely declined all offers of the kind with a wave of the hand and a look of compassion, which I hope intimated my commiseration for their ignorance of the true science of smoking well. As the ladies all managed to get seats near open windows, they seemed not much incommoded by the fumes of the cigars, qualified, as they soon were, by the smoke from my pipe.

We struck away across the island due south, in the pitchy darkness. We anxiously looked for the light of day which should enable us to see for the first time the country which has never known a frost — where seed-time is in perpetual season, and where harvests are ever ready to be gathered. At length a faint light appeared in the east, and the morning came on apace, as in all other lands, till houses and fields became fairly visible.

From its appearance and the growth upon it, the soil is evidently strong and fertile where it has not been worn out by long culture. Everywhere along the road it is strongly impregnated with iron, and so is of a deep red shade, sometimes approaching the maroon. Small fields of green corn, mostly broadcast, were constantly observed. On this road but little sugar is grown, and not much tobacco. The tobacco is all grown in small patches. In no instance did I observe more than an acre in one field. The leaf is not more than one third the size of that grown at the south.

The royal palm is the most conspicuous forest feature in the country. It is really a most beautiful tree, occurring in a park-like arrangement. It attains a height of forty to fifty feet, the foliage all clustered at the top, but without a limb, generally very straight, with a light smooth bark. It enlarges in size from the ground half way up, where it is nearly twice the diameter it is at the bottom or the top. From four to ten feet below the tuft of leaves there is a section of the trunk which is a deep green, having the appearance of a green succulent stock.



or twelve years old. I was informed that a banana-tree bears but one cluster of fruit at a time, but some of these are of enormous size, as you have no doubt seen them in eastern markets. When gathered they are always green, and subsequently ripen to the rich yellow shade.

Our course for fifty miles was south, which took us to within ten miles of the south side of the island. There we change cars for Matanzas, thirty-five miles distant in a northeast direction. At this station we got a cup of coffee, which strengthened the inner man somewhat. We saw no coffee plantations on the route. We reached Matanzas at 8.40 A. M. and took cabs for Pratt's Hotel, which took us over half a mile through the town to the very shores of the bay, where we were met by mine host, who is an Englishman, though long a resident here. We ordered volantes to be got ready while we ate our breakfasts.

Matanzas is a fine seaport town of say twenty thousand inhabitants. Most of the streets are of good width and in tolerable order. It is situated at the head of the bay of that name, on the north side of the island, about fifty-five miles east of Havana. The bay is spacious, about five miles deep, and has a good entrance. No docks are built for the convenience of commerce, so vessels have to anchor out in the bay and unload and load with lighters. Last August a hurricane, which raised the water to an immense height, drove vessels up into the streets, tore down houses, destroyed the bridges, and made quite a wreck of the lower part of the town. Many lives were lost.

A little after nine o'clock we sat down to breakfast with the family and guests of the house, which was a Spanish-Americanized meal, but answered all the demands of nature. As our carriages did not appear I began to be impatient, but mine host assured me that they would be around after a while; that it was a great job to get three carriages ready on so short notice, and that we must not expect the dispatch here which we were accustomed to in the States. We then

took a walk to the fish market and about the town to see the sights. A long string of moving stacks of green corn fodder, with little mules under them, told us that they knew as little of the use of wheels for transportation as they do in Havana. We were vastly amused at seeing half a dozen men loading a stick of lumber on a cart with a pair of oxen. After a great bustle, and much pulling and hauling, they got it started up the inclined bed of the cart, and to make a sure thing of it they made a great slashing and goading and never stopped until they pulled it clear over the cart. Then manifestly there was a volume of Spanish profanity, which happily we could not fully understand. But loud voices, looks, and gestures were quite sufficient to inform us that somebody was pretty mad.

V.

A ROUGH DRIVE. — THE CAVE. — PREPARATIONS FOR EXPLORING IT. — THE DESCENT. — STALACTITES AND STALAGMITES. — DIFFERENCES IN TEMPERATURE. — VALLEY OF THE YUMURE. — THE RETURN JOURNEY.

At length, about half-past ten, the volantes came tearing down the street at top speed, drivers shouting, spurs jingling, and wheels cracking like very mad. Mr. and Mrs. Turner got into one, Mrs. Caton and Laura May took another, while Preston and myself got into the third, and Kennedy vaulted on to the shaft horse, and away we went like very Jehus, Kennedy's horse cutting all sorts of curlecues to get rid of his unwonted burden. Everybody ran and shouted at the strange sight of a rider on the shaft horse of a volante, and evidently set us down for a rollicking set of Yankees, although my white beard should have assured them that no harm was intended. Fortunately before the police interfered K. had had enough of his Tam O'Shanter ride, and managed to make the driver on the other horse understand he wanted to stop, and was soon crawling into the

seat with us, soothingly rubbing such portion of his person as had been offended by his inconvenient riding. This threw us somewhat behind the rest of the party, but our driver lashed away, apparently going two rods himself to the horses' one, till we overtook our companions at the outskirts of the town, when all struck a more moderate pace, for it is the wont of these drivers, like many others, to make the greatest display where most people can see them.

Our road now led us along the margin of the bay for about a mile, which gave us a beautiful view of the whole harbor and the outlet leading to the Gulf. At length we left the beautiful avenue upon the waters, lined on one side, as they were, with tasteful residences, surrounded with lawns and gardens fragrant with fresh blooming flowers, enriched with golden oranges as they swayed to and fro upon the long, slender branches in the gentle breeze which crept in from the waters. We turned sharply to the right and faced a very steep hill, which the drivers made us understand it was usual for able-bodied passengers to walk up. For ourselves we accepted the intimation, but insisted on their hauling the ladies up. To this they reluctantly yielded, and in due time we found ourselves at the top, overlooking the town and bay, which afforded a very lovely prospect. We now had two miles across the nearly level plateau of as stony a road as I ever encountered, and I know I have traveled over some rough places in my life. The loose fossiliferous lime rock, which appears to underlie all of the island which I have seen, is here covered but by a few inches of soil, and that had been quite washed away in the traveled road. Much of the way this was bordered on either side by dense bushes, among which are standing scattered royal and cocoa-nut palms. Now it was that the great strength of the volante proved itself. We crashed along among those rocks at a speed you would have thought it impossible for those mustangs to have attained. The drivers managed skillfully to avoid the largest stones, but at the best it seemed as if every moment

all must be smashed to ruins. Three of us on two wheels, and some of us a little weighty, made not the lightest load even for a volante, but then the weight no doubt tended to moderate the jolts, which at the best were calculated to endanger one's teeth unless firmly set. However, as the seat was placed full five feet forward of the axle, on shafts fifteen feet long, we were riding on springs superior to any others, unless it be a long buck-board. At the best we were badly shaken up when we arrived at a sort of home-like building standing on the level plain, where the drivers stopped, as we supposed, to take breath after their break-neck drive, so we got out to see if no part of the body had been shaken off, nor was it till some time after that we found out we were already at the cave. At length a couple of men came from a house two hundred yards away, and by poking and jamming managed to displace a brace with which the door had been fastened from the inside. We then entered the building, where we first saw under glass cases specimens of the wonderful formations we were soon to see in their native places.

While we are taking off our coats, vests, and hats, and the ladies were divesting themselves of as many of their wrappings as they could conveniently spare, I may explain that though this very ground has been cultivated for hundreds of years, there has been no suspicion of the existence of this cave until very recently, for the very good reason that it had no external opening. A few years ago the then and present proprietor of the plantation, who, by the way, acted as our guide that day, was quarrying stone to make lime for the Mr. Pratt at whose house we breakfasted, and thrust his bar down to loosen a stone, when it slipped from his hands and disappeared in the depths below. The hole was carefully enlarged and the abyss sounded to a depth of forty feet, when bottom was found. A light lowered revealed a spacious chamber with glittering crystallizations all around. Mr. Pratt was one of the first lowered into the cave, and he as-

and finally came to Cuba, where he made his fortune. Proud of his lowly beginning, and to commemorate it, in the centre of this court he erected a fountain, surmounted by a statue of himself with a great water pitcher in his hand pouring water into a dish for a customer; and there he stands, half buried in flowering shrubs and vines, sprinkled by the spray of the fountain. Although built with the solidity peculiar to the old style of architecture, the hotel is now becoming dilapidated, and it requires an expert to shut or lock a door or window which once would have defied a band of robbers. The bedsteads were all of iron, the mattresses hard, and the covering, of course, very light — a single sheet being found quite sufficient for comfort, although the residents complained that it was unusually cold, as a north wind prevailed during most of our stay.

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We took an early dinner at five P. M., and then drove out to the eastern part of the city and beyond the Parade Grounds. We were soon beyond the narrow streets of the old city, and in the broad avenues separating the large parks called the Parade Grounds, in the upper part of the city. These are beautifully situated, and most of them well inclosed, but not improved. They may be looked at, but are not to be walked in. Indeed, there are no walks or drives in them, yet the streets and avenues around them are well paved. We soon passed by these into a magnificent avenue of over a mile in length, bordered on either side by large trees, beyond which are several very fine lawns and gardens. At the end of this avenue is the Captain General's palace.

The avenue was full of all sorts of vehicles, driving to and fro, the Cuban ladies always bareheaded, although it was so cold that I found an overcoat comfortable. They have so little cold that they seem to have no idea of protecting themselves against it when it does come.

After taking a few turns in this avenue, much interested in observing the great variety of carriages and people, and some displays of police authority, which nearly frightened some of our ladies into fainting, we turned towards our hotel and retraced the narrow streets of the city by gas-light, gave our cabs a dollar each for the hour's service, and discharged them.

IV.

AN EARLY START FOR MATANZAS. — THE COUNTRY FROM THE RAILWAY. — PALM-TREES. — MATANZAS. — A WALK THROUGH THE TOWN.

At four o'clock in the morning a servant thundered on the door, and in execrable Spanish (allowing me to be the judge) announced that it was time to be stirring if we were to take the morning train for Matanzas. When one is traveling for pleasure, we do not always *see it* when suddenly awakened from a sound sleep at that unseemly hour, and my first thought was that Matanzas and the cave might go to the dogs their own way for all me; but when I became fully awakened, I realized that the ways of a traveler must often be hard, and that if he will sacrifice the comforts of a quiet home to see people not half so important as those he has left behind, it is but a just punishment that he be dragged out of bed at any hour of the night, and hustled into strange streets, among strange people, to go to see strange places. So I quietly submitted to the necessities of the case, and resignedly proceeded to make my toilet. Not a crust could be found to brace the stomach for a four hours' ride, and I thought some faces were longer than usual when we assembled in the old stone hall leading from the inner court to the street. A whistle is the universal call for everything and everybody in Cuba, and as a whistle is the same in Spanish as it is in English, so far as I could discover, to that extent we could all speak Spanish. The accompanying gesture, however, is the reverse of that with us; for if

you wish to motion any one to come you must wave the hand from you instead of towards you, and reverse the motion if you would have him go away. Several cabs were standing about, both drivers and mustangs evidently sleeping quietly in their places; but a few sharp whistles aroused them, and three cabs, which accommodated the seven composing our party, served us, and at sharp five we started for the dépôt, a mile distant. It was very dark, and the narrow streets seemed lonely and deserted as we rattled over the rough pavement with a noise that might have been heard half a mile. However, as we emerged from the old city, in the neighborhood of the market, activity and lights were abundant, for the supplies for the city were just then being placed in tempting order to invite purchasers. At length we arrived at the dépôt and were pointed to the ticket agent's window. There the word *Matanzas*, the exhibition of fourteen dollars, and the elevation of seven fingers conveyed all the information necessary to procure our tickets, which were soon passed out. A sable youth standing by pointed the way to the cars, in which we were soon seated; but none too soon, for in three minutes more we started. The cars were very plain, old, and by no means neat. The seats were furnished, back and bottom, with cane splints, which undoubtedly gives the most comfort in this hot climate. The windows were provided with lattice shutters to keep out the sun and rain, but no glass.

The first thing noticeable was that nearly every one was smoking, and this induced the suspicion that we had got into the wrong car, although it was the last one on the train. A glance into the other car corrected this supposition, for the whites of the eyes set in black surrounding showed that that was appropriated to gentlemen of another color, and the nasal organs soon conveyed an admonition that it was not worth while to penetrate too deeply into the festive circle I saw before me. I returned to my seat in the back car, and in sheer self-defense filled my Shaker with genuine Illinois

by the short we had an opportunity of seeing more of the country, which was a desirable point gained.

This short route runs through a richer and better cultivated country than that through which we had passed in the morning. The tobacco patches were larger, and so were the banana orchards. But the sugar plantations were the striking agricultural feature which attracted attention during this afternoon ride. We passed very many large ones, and saw many thousands of acres of cane all ready for the knife, closely adjoining the road, like fields of corn in season with us. The amount of vegetation in a sugar-field is really incredible. It seems fully equal to that of the canebrake. Though not so tall it seems thicker on the ground, with much larger stalks.

The same red soil prevailed on this route which we observed in the morning, till we drew near the coast, and within twenty miles of Havana, when it gradually faded out and was succeeded by a soil of a dull, bluish cast which appeared to be equally fertile.

About 4.45 we reached the dépôt on the east side of the bay, where we had to wait twenty minutes for the ferry, which took us across to the city, and to the St. Isabel. Our friends joined us there the next morning about nine o'clock, with glowing accounts of their view of the valley of the Yumure.

VI.

CULTURE OF TOBACCO. — VISIT TO A TOBACCO FACTORY. — CIGARETTE-MAKING. — A SUGAR-PLANTATION. — DENSITY OF VEGETATION. — THE OPERATIONS OF A SUGAR-HOUSE. — THE WORKMEN.

The principal products of the soil here are tropical fruits, such as oranges, lemons, limes, citrons, figs, pomegranates, dates, bananas and pine-apples, and sugar and tobacco. I was unable to obtain satisfactory data to enable me to state the amount of each produced on the island, or even how

much is brought to the Havana market, and had I succeeded it would be hardly worth while to give the details.

I have before stated that, so far as my personal observation goes, the tobacco is grown in small patches, and certain it is that it is nowhere grown in large plantations and fields like the sugar-cane. The world knows that the tobacco grown in Cuba has a peculiar flavor and aroma at once recognized by the connoisseur. It may not be readily determined with certainty to what this peculiarity is due, whether to the soil, the climate, or the peculiar properties of the atmosphere. Most likely in a degree to all. In New Orleans large quantities of cigars are made, as is also done in Key West, by workmen driven from Cuba by the exigencies of the times, of the best tobacco imported from the island; and yet it is claimed that those made in New Orleans fall far short of the genuine Havana, while it is admitted that those made at Key West are hardly distinguishable from those brought from across the straits, there but ninety miles wide. As an evidence that the climate and atmosphere have more to do with the peculiar fragrance of the Havana tobacco, I was informed by residents of Key West that Connecticut tobacco is brought there and stored in hulks anchored as far out in the bay as safety will admit, and there left for a season or a year, when it acquires the true properties of the Havana tobacco, and if manufactured there makes a genuine Havana cigar. To you it may appear plain, but I confess my inability to understand why the Havana tobacco must certainly lose its peculiar excellence when exported to other countries, unmanufactured, while, if taken out in the form of cigars or cigarettes, it retains its goodness in all countries and in all climes. After all, I must confess to a certain degree of skepticism on this refined subject. I must believe that it is a case where much is in a name. Cigar smokers, like wine-bibbers, affect great accomplishments and refined discrimination, to question the infallible accuracy of which is to give mortal offense, and

yet they widely disagree in their conclusions when subjected to separate and independent trials.

In Cuba, as in other countries where tobacco is raised, there is a great difference in the quality of the product, depending upon the soil, the surroundings, the altitude, the mode of culture, and especially the handling or curing. By experts these grades are no doubt readily determined, and with great accuracy. I have heard it stated that the best Cuba tobacco is never exported, but I am satisfied this is not so. It is a mere question of dollars. He who will pay the price can get any quality he desires.

Please accompany us to the largest cigarette manufactory in the world, and not to tire you we will make the visit shorter to you than it was to us, for I was interested in all the minutiæ and inquired into every detail.

After breakfast had been duly disposed of, and a proper time had been allowed for burning the weed, our party was duly assembled. Angeleno uttered his loud, shrill *hist*, with the repulsive wave of the hand, and at once the cabs were at the door, and we were directly on our way to *La Honrador*, 105 *Hechos Mt. Justificaran, Gran Manufactura*, etc., etc., which proved to be about five squares from our hotel. The cabs took their two dimes each, and we entered the arched doorway, where we were received in a broad hall by the door-boy, about thirty years old, who motioned to seats and disappeared, but soon returned with a middle-aged gentleman who did the honors of the establishment with the most unaffected courtesy, and who never seemed to weary in answering questions. We were first taken into an anteroom, where we were requested to register our names, each one of the party separately in a space ruled off for the purpose.

We were then taken to the department where the casks and boxes of various sizes are made in which the cigarettes are packed for shipment or sale. The machinery is the most perfect of any I ever saw designed for the purpose.

For instance, a sawed strip is put into the machine, where it is shaved and beveled, the chime and crease all cut complete, and it comes out finished. All the staves are of a uniform size, so that the packages are precisely alike, and set up with the greatest rapidity. The boxes used are small. The sides and ends are mitred and dove-tailed, and so are put together quickly. The one slides into the other so firmly as to make a close joint and a firm package. The sliding in of the top and bottom completes the box without a tack or nail. Elm is used for the casks, and basswood or whitewood for the boxes, both brought from the States. The machinery was made in New England, and is very complete.

From this we passed to the room where the cigarettes are counted and rolled into small paper packages, containing, on the average, twenty-three, depending on the size of the cigarette, of which there are several. The workmen in this room are all Chinamen, and we saw nothing more interesting than the dexterity which they exhibited, first in counting, evening the ends, and then rolling them into the wrapper, one edge of which is even with one end of the cigarette, while the other is folded down, when all is fastened with a touch of paste. We stood some time admiring the dexterity of one young fellow who far surpassed all the others. Nominally the wages of all are the same, four dollars a month, with rations and lodging, but the more expert receive gratuities in addition, and all are allowed piece-work after their ten hours of labor is performed. Their overwork is generally three hours per day, during which time the one just spoken of earns one dollar and fifty cents.

We then went through every other department of the establishment, which exhibits the very perfection of system and order. But it is not worth while to enter into detail, which would occupy too much of your time. Everything but making the cigarettes and making the paper is done in the establishment.

The tobacco used is the clippings from the cigar makers, and only the best tobacco is used. It first passes through a machine, which takes out all the dust and other foreign substances. It then goes to the cutting machine, through which it passes several times. When properly prepared, with the paper wrappers, the tobacco is given out to the manufacturers all over the city, who take it home and make the cigarettes at so much per thousand, scarcely any being actually made in the establishment. The product of the concern is now seventy thousand bunches, of twenty-three each, *per diem*. Besides this, it makes a large amount of smoking tobacco, which is of the same quality, though not cut so fine; also, a large amount of cigarette tobacco, which is sold to be wrapped elsewhere. This, under hydraulic pressure, is made into pound cakes and covered with fancy envelopes. What I got cost fifty-five cents per pound.

The quarters where the Chinamen lodged were as neat and clean as possible. There were sixty cots, consisting of canvas stretched one above another, three deep, with a cotton spread for cover, and no pillows, which are disliked by the Celestials.

It took us two hours to go through this establishment, when we returned to the anteroom, where each gentleman of the party was presented with a package of cigarettes with his name printed upon it in the highest style of the art, and each lady with a piece of music similarly marked. I was then invited to enter on the register opposite my name such remarks as I chose, which I did, I am sure, in complimentary terms.

Very few of the cigarettes are sent to the United States or Europe. Nearly all are sent to Mexico and South America. Cigarettes are, no doubt, very fine for the effeminate denizens of the tropics, but for myself I would as soon undertake to breakfast on a single trout. Nor will the tobacco, of which they are made, compare with the substantial product of our own and neighboring States, when used

in a pipe, which, after all, is the only cleanly and rational mode of burning the weed.

Anxious to see a sugar plantation more closely than I had been able to do from the cars, at eleven o'clock the next morning I was at the dépôt of the road leading to Marianao, which is near the coast, nine miles west of Havana, on my way to visit Al Yugo Toledo, which is situated two miles south of that ancient town; the rest of the party preferring to visit some pictures. Twenty-five cents procured the ticket, and I had scarcely taken my seat when the train started, and in thirty minutes was at the end of the road at Marianao. This is a pretty village, on rising ground, in full view of the Gulf, which is about one mile distant. A broad drive of half a mile leads from the dépôt up to the old town, which is built in the style antique, and suggests a familiarity with those who a hundred or more years ago had lived on the island.

Several cabs at the dépôt were ambitious to serve me. I made my request understood to be taken to some one who could speak English, and so I was driven up to a grocery, whence hobbled out an old fellow who might have been a sailor long ago, and who, in the course of his professional life, had picked up a little more English than I had Spanish. It was hard work, no doubt, and took some time; but at last, with his help and an abundance of gestures, I concluded a contract to be taken to the plantation and returned, after remaining there as long as I pleased, for the eighth of an ounce, or two dollars. Mind you, this was for a two-horse cab, for I had been admonished that two horses would be needed, and I found it so; for as soon as we cleared the village where the streets were very good, we fell into a hard, stony road, only better than that which took us to the cave of Matanzas. Half a mile before we reached the place we struck the plantation, where the narrow road was through uncut cane, uninclosed by any fence. It was the first time I had ever had a good opportunity of examin-

ing closely a fully matured crop of cane. This had been on the ground a year and a half or more, for, from some cause, they had been unable to harvest it last year. I cried *vasta* to the driver, and he stopped, when I jumped out and plunged into the dense mass of cane. It was truly wonderful to see the amount of vegetation which covered the ground, — so dense that a wild buffalo could hardly have forced his way through it. From each root radiated a great number of stalks, from an inch to an inch and a half in diameter, bent and tangled in every imaginable direction, of a dark red color, or striped, from each joint of which projected a large succulent blade, towards the top more dense than lower down. The canes spindle out towards the top, many terminating in long silky tassels, of a drab color, with long, delicate fibres, soft as down. Not the rudiment of seed was found on any of them, and I could not learn whether a single seed is ever found on one. The slender top of the cane contains no valuable saccharine, and so is cut off with the blades and left upon the ground, leaving the canes, as taken to the mill, from four to six feet in length. I brought away one of the tassels as a vegetable curiosity.

When my observations on the cane-field were completed, I resumed my seat, and proceeded to the headquarters of the establishment, indicated by the tall smoke-stack of the sugar-house, which towers far above the cane-fields, and is seen at a great distance. The absence of smoke issuing from this had already told me that they were not grinding that day. I sadly felt the disappointment at not seeing the mill in operation. I soon arrived at the little village and made my way to the office in the sugar-house; but the young man in charge was so stupid that he could not even understand his own language, when I addressed him in my most classic Spanish, and he seemed equally ignorant when I addressed him in English. He, however, motioned me to follow him, and he led me to the best house on the planta-

tion, where a sprightly young woman met me at the door with a cheerful "Good morning," and certainly the salutation never sounded in my ears more sweetly. We were soon seated on the veranda, and I was learning all I could of the surroundings. She was the wife of Mr. McDonald, the chief engineer of the establishment, whom she had captured a few years before when on a visit to the island from her home in the States, whence her husband had come when quite young — eighteen years before. He had been up the night before attending to his duties, for he was pressing hard to get up some new centrifugal machines, lately arrived, and was now compensating himself with a sound sleep, from which I would not allow his wife to awaken him.

The house was an old-fashioned two-story mansion, as open and airy as possible, surrounded with cocoa-nut palms loaded with fruit in various stages of growth. In the rear was a vegetable garden for the use of the family.

The proprietor of the establishment is a Spaniard, with an unpronounceable name, so I will not attempt to write it. His family are in Spain, and he resides in Havana, but visits the plantation almost every day. The last cargo of slaves ever imported into Cuba was brought by this man, and what are left of them are still on the plantation. The prosecutions which followed this importation have deterred him from repeating the experiment.

In an hour Mr. McDonald awoke, and with him I visited the sugar-house, through which he showed me and made all necessary explanations. Having seen mills of similar construction in operation in Louisiana, I was enabled to comprehend his explanations fully, but to make it intelligible to you would require more space than I have at my disposal.

The reason they were not grinding on the day of my visit was that a heavy rain had so softened the ground, that to take the carts into the fields to haul the cane would so cut up the ground as to be a serious injury to the succeeding

crop. From this cause much time is lost in the course of the year, and sometimes, as was the case last year, large fields are left uncut, with no injury to the cane, but rather a benefit. The loss of time is only to be regretted. At any rate twelve months should be allowed to mature the cane, and it really improves for twenty-four months.

On this plantation about one thousand acres are cultivated in cane, which produce about twelve thousand boxes of sugar, of five hundred pounds each. About nine hundred hands, old and young, are employed, nearly one third of whom are Chinamen. Their time is not entirely devoted to the sugar crop, for there is a valuable stone quarry on the place, which is also worked by the slaves.

The present proprietor is evidently a man of comprehensive business capacity, as everything about the place testified. He has a contract with the city of Havana for removing all the offal from the city. A branch of the railroad runs quite through the plantation. By this all the city offal is brought, and is spread upon his cane-fields. By this means he has brought up his fields, which were once so run down as not to be worth cultivating, to the high state of fertility indicated by the product as above stated, which, at four cents the pound, will return two hundred and forty thousand dollars, or two hundred and forty dollars per acre.

At one o'clock the hands came pouring out of what I may call the boarding-house, and arranged themselves in line by companies of perhaps fifty to an hundred each, when each was inspected, and probably counted, by a driver, and then started to the different parts of the plantations assigned them. One or two of the companies were composed exclusively of men destined, I presumé, for the stone quarry, others of men and women, and others, again, including children, as young as five or six years old. These children seemed to be the happiest mortals I saw on that island. They ran, and gamboled, and played on the way to the fields, laughing and halloaing as if they would split their

little sides and throats. They could turn more summersaults, and throw themselves into the dirt oftener, and get up quicker, than any other merry little rascals I ever saw. Poor things, they were too ignorant to know how forlorn was their condition, and how wretched they ought to have been, ever crying instead of laughing. How much more does human happiness depend on mental rather than physical condition. What other supper did Oliver Twist ever so much enjoy as that which he first ate in the undertaker's kitchen, of broken victuals which had been put aside for the dog? But I must close, for my space is more than filled. However, is not this a funny country, where the pigs are as naked as the Greek slave, and the sheep have gone so far as to put off their wool and put on hair, which, for aught I know, like the pigs, they may also discard before long.

VII.

A WALK ON THE WHARVES. — CHINAMEN AT WORK, AND AT DINNER. — THE INTRODUCTION OF CHINESE LABOR INTO CUBA. — THE CONTRACT SYSTEM. — SLAVERY IN THIN DISGUISE.

A walk along the covered wharf, where vessels are moored, stern on, as close as possible, and where their cargoes are discharged, presented an interesting spectacle, giving one an idea of the commerce of the place and the mode of handling freights. Nearly everything is done here with hard labor. Whites and blacks, grading down through every imaginable shade, thronged everywhere, — some busy at work and others loitering about, leaning on boxes and bales, enjoying the luxury of idleness with a zest that was truly refreshing. At one place a little open sloop was being loaded with oranges from a pile of perhaps five hundred bushels lying on the pavement beyond the wharf, whence they were brought in baskets on the heads of a gang of negroes, who dumped them into the vessel much

the same as we would handle potatoes in our country. At another place a ship was discharging a cargo of paving stones, — small squared blocks, — which were dumped down a runway to the floor of the wharf, whence they were removed in wheelbarrows by a gang of Chinamen. A dozen of the little cubes constituted a load for the laborer from the flowery kingdom, while four such loads would have been but a plaything for a sturdy emigrant from the green isle. Nor did they move with the alacrity which characterizes the actions of their countrymen in California. I lingered around till they suspended work for their dinners, and observed them at their festive meal. Their favorite rice was wanting. The meal consisted of garbage, which appeared to have been gathered from swill barrels. Bits of bread, and scraps of meat and vegetables, were fished out from the filthy mass and eaten with an apparent relish, which testified that the luxury of a feast depends not so much upon the viands provided as upon the habits of the guests and the demands of nature which it is required to supply. One young fellow espied a piece of the large tendon which had once formed a part of a bullock's neck, and, no doubt, had once helped to push heavy loads. It was about four inches long and two and a half inches wide, and had apparently been thoroughly boiled in some cheap soup-house. He seized upon it as upon a rich prize, and commenced peeling off small strips and swallowing them with a relish. At length he stripped off a liberal portion and offered it to a mangy cur that stood by with an imploring look. The dog smelt of the offered morsel, and then turned away in manifest disgust, as if insulted by the offer of a portion of what a man seemed feasting upon.

Let us stop here a few minutes to allow me to speak of the Chinese in Cuba, for I observed them with some attention in the city and in the country, — on the wharves, in the streets, on the plantations, and in the chain-gangs. Of all pitiable objects to be met with anywhere, these demand

most of our compassion, and appeal strongest to our sympathies. The condition of the negro slave is enviable as compared with theirs. They are possessed of sensibilities which point the sting that goads them to despair, and doubles every burden which wrong and outrage imposes upon them. Here we see exhibited the hardness of the human heart, which has been calloused to human suffering by the system of slavery, which, in our southern States fifteen years ago, when slavery there was thought to be a divine institution, would have been considered a disgrace to the name of man.

The Chinese were brought to Cuba under contract to work a given time at specified wages, and to be supplied with stated rations, and at the expiration of the time to be returned home, or to be free to go where they pleased. From the very beginning they were worked and treated precisely like the negro slaves — put into the field, and into the quarters, and at the table with them promiscuously, and, like them, subjected to the lash of the overseer. Their tastes, their appetites, their habits, their customs, and their prejudices were in no way consulted ; the only question was how the most could be gotten out of them at the least cost and with the least trouble.

Perhaps the first outrage to which they were subjected was the loss of their queues, which compelled them to consume too much time in making their toilets to suit plantation interests; so all were sheared off at once, without saying as much as "By your leave, sir." I saw but one Chinaman in Cuba who still retained that cherished ornament. All are aware that the loss of this appendage is looked upon by them as a mark of degradation, and so they felt it. But what had their feelings to do in the matter? The planters would as soon have consulted the mule whether he would be roached or not.

Nominally the law protected them against unnecessary abuse, — so it is with the negro slave, — but that law is

never allowed to intrude itself upon the sugar plantations. There the master is an unrestrained despot, whose will is absolute law, and from whose judgments there can be no appeal. There is no one to hear the cry of the oppressed, but the groans of suffering must waste themselves upon the breeze which cannot waft them beyond the bounds of the cane-fields. Practically, both the negro slave and the Chinese laborer are beyond the reach of all legal protection.

No people in the world are so indifferent to the long future as the Chinese, and none have so little dread of death, and hence it is that suicide is so frequently resorted to when life becomes a burden. Losses from this cause became so great that every precaution became requisite to prevent it, and in many instances, no doubt, compelled less cruelty or better treatment. An American, who has resided many years on the island, informed me that at one time, when a new lot of Chinamen were brought in, they manifested so much sullen discontent that every precaution was taken to prevent suicide by hanging, which is the favorite mode, and yet the next morning fourteen were found dead. They had hung themselves by strips of clothing torn up and attached to benches, tables, and other low objects, so that they had to stretch themselves out on the floor in order to bring to bear the necessary pressure. At any moment while life lasted they could have relieved themselves by drawing up their limbs under them.

Upon the expiration of the earlier contracts, they were so far observed as to give the laborers their freedom, when they left the plantations and resorted to the cities and towns to pick up a scanty living as best they could, or, if possible, escape from the country. This soon produced a scarcity of labor, and the interests of the great planters required a re-enslavement of those entitled to their freedom. Whatever their interest required their money could procure from a corrupt and unprincipled Captain General. Accordingly he

issued a decree requiring a renewal of all expiring contracts for service, thus practically reducing all who were working under contracts to a state of perpetual slavery. Nor did those who had already obtained the freedom to which they were entitled escape his attention; for another decree forbade them passports, without which no one, bond or free, can leave the island. What may those freedmen expect as the next step in this fearful drama, where no more regard is paid to human rights than when the negro was torn from his home in Africa and subjected to the middle passage? Why should the national voice, at whose loud command the slave-trade to these Spanish West India Islands was finally stopped, be now hushed in silence, when, if possible, a greater outrage is perpetrated upon those who have been lured to the country under a promise of protection? How long will England, whose noble efforts to suppress the slave-trade have cast so much lustre upon her national character, be still, now when humanity again calls aloud for help? Has she exhausted her philanthropy upon the African that she has none left for the Asiatic? And our own country, too, — shall we be silent when just across the narrow channel, and almost in sight of our own shores, this wrong and outrage are done upon weakness which is totally unable to protect itself? Why have we freed three millions of our own bondmen for humanity's sake? Why have we spent millions of dollars in sending ships to the coast of Africa to prevent these very Cubans from bringing thence the negro to work their plantations, if we are now to allow them without remonstrance to practice a greater inhumanity upon the feeble Chinaman, who has attained a high degree of civilization which gave a relish for the liberty which he enjoyed before. His own government is totally unable to protect him, else the wrong would never have been perpetrated. Shall not, then, other nations near at hand, who have large interests and intercourse with his own, vindicate these outraged rights which so loudly appeal to the sense of justice of all man-

never allowed to intrude itself upon the sugar plantations. There the master is an unrestrained despot, whose will is absolute law, and from whose judgments there can be no appeal. There is no one to hear the cry of the oppressed, but the groans of suffering must waste themselves upon the breeze which cannot waft them beyond the bounds of the cane-fields. Practically, both the negro slave and the Chinese laborer are beyond the reach of all legal protection.

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a of the abolition of slavery on the island has
l to some extent, and since the breaking out of
. even some legal steps have been taken in that
declaring that children born since 1868 shall be
aining a certain age, also declaring slaves past
of age free; but how far these measures have
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throwing helpless infants and worn-out servants
may not readily be perceived. This agitation
tedly been stimulated by the revolt, if, indeed, it
re find its birth, although the friends of the gov-
ow declare that the abolition movement is em-
and retarded by the civil war, because any en-
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o have made abolition one of their cardinal princi-
aniards, above all others, abhor the idea of doing
good or bad on compulsion. I must be permitted
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necessity which has produced slavery will maintain
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ne the power she would mend matters here.

is would be an appropriate place for some suggestions
the barbarities practiced by both parties alike, in the
cution of the civil war; but these have already been
public, at least to some extent, and as my object in
letters is to bring before you something already not so

familiar, I shall not trouble you with a dissertation on that subject. These barbarities are of such a character, undoubtedly, as to bring the plane of Spanish civilization far below the standard upheld by other Christian nations. While with all other civilized people the last four hundred years have been constantly weeding out barbarism from the human heart, and sowing in its stead the seeds of humanity, fraternal love, and universal benevolence, the Spaniard alone retains the heart of stone, which had no feeling for human woe when Cortez conquered Mexico, when Pizarro slaughtered the Peruvians, when Philip the Second desolated the Low Countries, and when the Inquisition tortured innocence in the name of Christ. We have been too much inclined to hold the Church responsible, under whose name such monstrous inhumanities were perpetrated; while, in truth, we should alone blame the wicked hearts who used her as a cloak, not to cover up, but to sanctify in their own eyes their deeds. So has religion at other times and in other countries been invoked to hallow the blackest cruelties which the vile heart of wicked man has been able to invent. We have then only this difference: Christianity in other nations has purified the heart of man and infused into it a genial warmth that makes it love its fellow-man, and feel with him his sorrows and seek his welfare; while in Spain alone this heaven-born love of man for man could never find a fitting soil in which to strike its root, and if even for a moment it got a start, the weeds of hatred, of malice, and of cruelty speedily choked it out.

How long? Oh, how long?

VIII.

THE AMERICAN FLEET IN CUBAN WATERS. — A VISIT TO THE "TERROR." — ON BOARD THE "KANSAS." — THE OCCASION OF THE FLEET'S ARRIVAL.

I should be guilty of an injustice to you, to myself, and to our courteous entertainers, should I omit to mention our visit to the American fleet now in the bay of Havana, for which we had received repeated invitations from several of the officers whom we had met on shore. At stated hours each pleasant day the boats are sent ashore to take any who wish to go on board. At eleven o'clock, on Thursday morning, we were at the Derrick Wharf, and a few minutes later the whale-boat of the "Terror" came along-side, in which the ladies and myself were soon seated, while the rest of the gentlemen of the party took seats in another boat which arrived just as we shoved off. The precise and measured stroke of the oars in the hands of the eight sailors, dressed in the blue uniform of our navy with the most scrupulous neatness, showed the thoroughness of the discipline which pervades every department of the service. A short half mile, which was overcome in a very few moments, brought us to the "Terror," where we were received by Mr. Niles ("Mr." is the title by which all naval officers below the rank of captain or commander are addressed), the officer of the day, with a cordiality which showed how welcome is a visit from their countrymen and women to those who are subjected to the monotony of a life on a ship of war in port.

Mr. Niles is a son of Judge Niles, of Belleville, in our State. I had met him at the St. Isabel, where I had assured him that we should not omit to visit his ship. It was manifest that he felt a peculiar pleasure in entertaining an old friend of his father, whom I knew before he was born, and a party from his own State; for, say what you will, while

we feel the deepest loyalty to the nation, we cannot help feeling a special love for our own State, and a special affection for her citizens when we meet them in foreign countries; and so, it was manifest, felt Mr. Niles.

As the "Terror's" decks are scarcely two feet above water it was easy to get on board, when we were conducted to the seats under the broad awning on the quarter-deck, where we were introduced to the officers on board, who hastened to bid us welcome. We regretted that the admiral was on shore; but it would have been impossible for him to have added anything to the cordiality of our reception.

The "Terror" is a double turreted monitor, armed with two fifteen-inch guns in each turret. These turrets are of iron, fifteen inches thick and round, so that a shot must almost certainly strike one a glancing blow. They appear to be absolutely shot-proof. They are revolved by machinery very quickly, so as to reach an object in any direction. I verily believe that monitor alone could sink every other ship in the harbor, and beat down every fortification protecting it, in an incredibly short time, and without receiving a serious scratch. She is truly a giant terrible in her strength, now quietly reposing in the still waters of the bay, but ready at any moment to shake off her lethargy and arouse herself for battle whenever the honor of the nation or the safety of her citizens may require it.

We were first introduced to the inside of the after turret, and the mode of working the guns fully explained. We were then taken below and shown the powerful machinery for working the ship, and the ingenious and substantial contrivance for revolving the turrets. We were then shown into the officers' quarters, where we tasted some excellent sherry by lamp-light, for you must know that everything below those iron decks is as dark as midnight, and it would be uninhabitable there, especially in that hot climate, were it not for the constant operation of a powerful fan or blower, operated by a steam-engine, which must never cease. This

effectually ventilates the ship throughout. Still, those dark and confined quarters must be very trying to officers and men, and anything but pleasant, so that all remain on deck as much of the time as possible, even during the night. The hardship of the service on board the monitor is recognized by the government, for one year's service there is deemed equivalent to three years on an ordinary man-of-war, at the end of which leave of absence is granted for rest and recuperation.

From the ward-room, where all the officers are quartered except the commander, we enter the cabin, which is nearly as spacious as the ward-room. But while both were well and comfortably furnished with sofas, chairs, and tables, no extravagance was observed in either. Everything was in the most perfect order, and scrupulous neatness reigned throughout. After the inspection of the officers' quarters, we went forward and inspected those appropriated to the petty officers and men, where the same strict care was manifested as that observable in the after part of the vessel. By such care and vigilance alone is it possible to maintain the high sanitary condition which prevails with so many men in such close quarters in such a climate as that of the West Indies.

The cooking department, a matter of no small moment, where so many men are to be constantly fed, also underwent inspection; and the glittering copper utensils, as bright as burnished gold, told unmistakably that every dish was burnished with as much care as in a private family, under the watchful vigilance of the most fastidious housewife. The fragrance wafted from the cook-range by the circulating air-currents actually whetted our appetites, and told us plainly that the time for lunch was drawing nigh. At an intimation to the officer of the day that we must now take our leave, an order was lowly given to a subordinate, and the shrill call of the boatswain's whistle was heard, followed by his loud, hoarse order to man the cutter, which was exe-

cuted in an incredibly short time, and we were handed into the boat with the same gallant courtesy which had characterized our treatment from the beginning.

We pulled away to the "Kansas," to pay our respects to Captain Hatfield, the commander of that ship, who had called for me at our hotel the day we were absent at Matanzas, and whose card we found on our return. Unfortunately, he, too, was absent on shore, but we were received by the officers on board with the same cordiality and politeness which had characterized our reception on board the "Terror." But it was now getting late, and we made but a limited inspection and a short stay. The same order, system, and cleanliness were observable here as in the "Terror," but the quarters of both officers and men were light and airy, and much more comfortable than in the other ship. When we were ready to go ashore the boatswain's whistle was again heard; and in a loud voice, which could be heard by all, the order was given to man the boat, and we were soon skimming over the waters towards the shore.

At the time of the brutal murder of the eight students (for that is the true name for that cowardly crime), in obedience to an order which the murderers demanded and dictated, we had no force in Cuban waters. The excitement was so intense, and the danger to all foreigners, and especially Americans, so great, that our consul applied to our government for a naval force to protect his countrymen in Havana. At that time the "Terror" was lying at Key West. Orders were sent by telegraph to repair to Havana as soon as possible. When this order was received her decks were cumbered with the great cook range and all the other conveniences for living on deck, to which the summer heat had forced them. The range was taken apart, lowered below, and again set up, the decks completely cleared of every incumbrance, and the ship got ready for sea in the incredibly short time of forty-eight hours. She did not even wait

for the tender which had been sent to accompany her, but hired a Florida steamer which opportunely arrived, in command of which Mr. Niles was placed, when she dashed out into the Gulf Stream and pressed all steam for her destination. Even in a comparatively smooth sea the decks of the monitor must be repeatedly washed, and in rough weather she must be constantly submerged, so that it is never entirely safe to trust her without a tender. The weather was propitious, however, and she passed the ninety miles which separate the southern extremity of Florida from Cuba and entered the harbor of Havana next morning, where she occasioned as great surprise as if a comet had struck the island, for her coming seems to have been entirely unexpected by the people, and, probably, by the authorities, for the consul did not offer to telegraph for the fleet from Havana, but sent his message to Key West, where, by the use of a ground wire, as all telegraphers well understand, all communications could be cut off from the cable south of it, and the government censor, who inspects every message left at the office and forbids or allows it to pass as he pleases, must remain in blissful ignorance of what might be expected. Some of the populace under volunteer influence complained of her appearance as a menace and insult to Spanish dignity; but the complaint soon subsided, and all Havana rushed to satisfy their curiosity by an inspection of the nondescript monster which had so suddenly dropped in among them. The rush of visitors for several days was so great that they appeared like a swarm of bees, both below and on deck, and demanded the constant and vigilant attention of all on board to take proper care of them. Of course there was no danger from them, for they came unarmed and in promiscuous companies of men and women, and so were in no condition to do mischief had there been any desire to do so. A few days' inspection satisfied the curiosity of the inhabitants, since which time visitors have been mostly strangers. In a few days two more

ships of war arrived, and there all three quietly remain watching the course of events, which it is to be hoped is all the service which will be required of them.

Between our vessels and the shore there lies a magnificent Spanish iron-clad man-of-war, which could very shortly dispose of our wooden ships, but could make no more impression on the monitor than a hail-storm on a slate roof. I also noticed a British man-of-war lying in the harbor.

IX.

THE FEEBLENESS OF THE SPANISH RULE IN CUBA. — THE VOLUNTEERS THE REAL GOVERNMENT. — NO LOYALTY TO THE GOVERNMENT ON THE PART OF THE CREOLES. — SEÑOR CASTAÑON. — HE REPAIRS TO KEY WEST. — THE DUEL. — THE RAGE OF THE CUBANS AT HIS DEATH. — A VISIT TO HIS SO-CALLED DESECRATED TOMB. — THE AFFAIR OF THE STUDENTS. — A GROSS OUTRAGE.

At the best the Spanish government in Cuba is scarcely more than nominal, even in those parts of the island professedly loyal. The real power is in the hands of the volunteers; they dictate who shall be appointed their nominal rulers, but real servants. Here, then, we have an irresponsible government, which foreign nations cannot treat with or hold accountable. While the volunteers govern in fact, they have no recognized head to answer for them in the actual influence which they exert in governmental affairs, nor is there any formal mode in which their views or their wishes can be expressed. Their will is manifested by the turbulence alone which gives the turbulent the principal sway, while the orderly and better disposed, who, I am induced to believe, constitute by far the greatest number, exert no influence upon public affairs. It is easy to see how a corrupt, bad man, by pandering to the prejudices and the passions of the wicked, and especially by the judicious use of money, can erect for himself almost a throne, defraud the government at home, rob the people here, and compla-

cently smile a sort of defiance when king or cortes threaten to call him to account. The consequence of all this is, that probably a more venal set of public men never cursed any country than those that now prey upon this fair and beautiful land. The New York Ring is washed in innocency compared with them. Individual fortunes were not made the spoil of the oppressor there, and a price was not set upon innocent blood. If suspicions have there been excited that the judiciary was not immaculate, at least festering rottenness did not preside in all courts, nor could judgments at all times be purchased with a price.

The volunteers are not native Cubans, or creoles, as they are here termed, but they are immigrants from Spain, generally of the middle or lower class, who have sought this country to better their fortunes, which at home were no doubt bad enough. A large majority of them are mechanics and laborers, who are more or less industrious, and very many of them really good and useful citizens under all ordinary circumstances. Their exact number is not known to the outside world, but is variously stated at from forty to fifty thousand. While all are organized and drill at irregular periods in small bodies, most of them are at their daily labor, but with their uniforms and arms close at hand, ready to be resumed at a moment's notice. A limited number, however, are in constant service, garrisoning the barracks and forts, of which they have managed to get possession; and bodies of these may be seen marching through the streets every morning at eight o'clock, with fine bands of music, as a constant reminder to the people that they have a living master, much as I have seen the French troops marching through the streets of Paris in the days of the Second Empire. These are for the most part young, active, well made men, two inches shorter than the average standard of American or Englishman, but rather more stockily built.

These volunteers decline to expose their lungs to the

malaria of the rebel districts, or their precious persons to the knives or clubs of the rude bands, but prefer to stay at home and guard the gates. The actual fighting must be done, if done at all, by the regulars sent over from Spain, of whom over seventy thousand have come since the war commenced, but very few of whom yet live, and hardly one in a thousand will ever see his native country again. Still they come, for during my stay another thousand arrived, and were disembarked in a violent rain-storm, as I observed. They remained but two days in the city to stretch themselves and get off their sea-legs, when they were gallantly escorted out of the city on their way to the battle-field by their loving brothers, the volunteers.

I took pains to inform myself as fully as I could, and I feel warranted in saying that there is really no loyalty to the Spanish government among the creole population in any part of Cuba. In Havana and in all the loyal districts necessarily these must constitute a considerable portion of the population. They execrate the present government all the more bitterly that they dare not express it except to those in whom they feel sure they may repose confidence. Hence it is that an American can learn more in a week of the feeling of discontent here than one of another nationality could in a year, for they seem to look to our government as their hope and trust. But few sympathize with the present rebellion, or revolution if you choose, for they lack confidence in the men at the head of it; and as for the masses, they pronounce them more ignorant and worthless than any other population on the island. In fine, they do not believe that the movement will succeed as a revolution, nor do they believe that the rebellion will ever be put down, but that this petty, cruel, relentless warfare will continue an indefinite length of time. And this is what they most lament, for while the rebellion still exists, Spanish pride will scorn to entertain a thought of parting with its even nominal sovereignty over the island. They believe Spain

would be glad to get it off her hands, could she do so without wounding her sensitiveness or her honor. Yes, they believe if the last vestige of the rebellion were extinguished to-day, so soon as a little time had elapsed that it might be forgotten, the island would fall into our hands, without the shedding of a drop of blood. Such are the sentiments and views of the native Cubans, both in the city and country, and even in the far interior, as I learned them from various and independent sources, which so far harmonize as to win my confidence in their reliability.

Señor Castañon was a Spaniard, a colonel among the volunteers, and the editor of a newspaper which was devoted to their interest, and exerted a great influence among them. They were more devoted to his person than to any other living man. As some expressed it, he was their idol. Many of the creoles had contracted for him a corresponding hatred. Offense was given and a challenge sent, which was accepted on condition that the affair should come off at Key West, on the ground that his adversary could receive no protection in Havana under the rule of the volunteers. The conditions were agreed to, the time appointed, and the parties and their friends accordingly repaired to the island. At Key West are gathered quite a number of native Cubans, whose known sentiments rendered Cuba an unsafe residence. Here they import Cuba tobacco, make Havana cigars, and roundly curse the Spanish government and all its sympathizers, and long for the time when Spanish rule shall be driven from the West Indies, and they may return to the lovely land from which they have been exiled. The night before shots were to be exchanged by the principals, Castañon in some way got into a quarrel with a number of these exiles and was shot; and his friends believe that the whole was a preconcerted scheme to murder him in a foreign land, where it might be done with impunity. The sheriff of Key West, who related to me the particulars of the affair, was present at the time, and once succeeded in

quelling the quarrel, but it was renewed in spite of him, as if both parties were anxious for the fray. In the excitement of the crowd it was impossible to say who fired the fatal shot. All dispersed almost instantly, nor have those most violently suspected been heard of since, notwithstanding the liberal rewards offered for their apprehension. Escape to the neighboring keys, and thence to the main, could be effected with the utmost facility during the night, where it would be impossible to find them. There was a rumor that the supposed leader had been seen at Nassau, and a detective was sent to search for him, but he returned empty-handed; and so the murderers are still unpunished, which is much to be regretted, for the outspoken sympathy for the Cubans by a large proportion of the Americans on the islands is well calculated to create an unfortunate impression on the minds of those to whom the murdered man was so dear. I was told in Havana that the man — an Englishman — who first reported the murder of Castañon on shore was actually torn in pieces, in their uncontrollable rage, by the volunteers. The body was taken to Havana and placed in a tomb with great pomp and splendor.

We had arranged, the evening before, an excursion to Castañon's tomb, and to the scene of the atrocious murder of the students, so we all took an early breakfast, and by nine o'clock were assembled in the stone hall for the start. Mr. Knickerbocker, of Chicago, who had already been carefully over the ground, kindly consented to act as our guide. The morning was deliciously fresh and cool, a smart north wind coming in from the Gulf. A loud *hist* from Angeleno, with that repulsive wave of the hand peculiar to this people, brought up the cabs with a rush, and we were soon rolling over the pavement toward the westerly outskirts of the city. Our course led us along by the fish market and near the shores of the Gulf, and some of the time through by-ways and over most execrable roads, which tried the strength of both horses and cabs, until at length we came

to a halt on a considerable elevation, by the side of a high stone wall pierced with grated windows and one large door. Here was the place where the boys charged with desecrating Castañon's tomb had been confined, and there, right against that wall, did they stand when they were shot. There was no mistaking the place. At four places, between the grated windows, the wall was newly painted with a dull yellow color, of a considerable lighter shade than the original paint. The stone wall was stuccoed, and so presented the appearance of a plastered wall, when painted. That new paint was to cover up and conceal from view the young and innocent life-blood which had been spattered against it, through the bullet holes, in the dying struggles of the poor victims to — I dare not trust myself to characterize it. If the blood had been covered up, the marks of the bullets upon the walls had not been obliterated. Yes, there were four such places upon that prison wall, thus painted to cover the crimson stains and the indentations of the wall; and against each of these four places two of the boys had stood before twenty Remington rifles, in the face of a sorrowing — I may say indignant — crowd, and were there shot down by those worse than savage volunteers. That foul deed must cause a great red blot, not only in the history of Spanish rule, but in the history of Spaniards. Nay, it is a blot upon humanity itself, for it is the reproach of mankind that we are of the same species as those wretches. When the bloody deed was done, when the reports of the rifles were no longer heard, and all was still, save the dying groans of the writhing victims upon the sod, even the terror of the cruel volunteers could not produce a single shout of applause from the concourse of spectators; and it is a happy evidence that there was something of humanity, besides the form, in the volunteers themselves, for of all the companies there drawn up, not one voice was raised in triumph or in approval; they seemed abashed at their own cruelty and wickedness, and hung their heads in very self-disgust.

But let us hasten on to the desecrated tomb, and see if I am right in calling this a foul murder, although perpetrated under the shadow of a legal form. A short drive brought us to the cemetery, where repose the remains of the murdered Castañon. All was still, for it was an unusual hour for visitors, but the great gates, like the gates of a walled city, which swung beneath a lofty arch, were open; so we alighted, traversed the broad flagging which leads up from the street, and entered. An attendant seemed to know instinctively what we had come to see, and pointed the way which led to the desecrated tomb.

Perhaps because there is but little earth upon the rock which underlies the soil, interments are not in excavated graves, but in tombs built of stone or brick upon the surface. In some of these may be deposited the remains of one, in others many. There are hundreds of these tombs, well built in a uniform style of architecture, some more elaborate and expensive than others. They are in double rows, back to back, with broad plats between those facing each other, in which are roses, or beds of flowers, and immediately in front of the tombs are flag walks. Although there may be exceptions, these tombs are not private property, but are rented out to those who have dead to bury. There mortality is allowed to remain for twenty years, when it is supposed to have turned to dust, which is then taken out and burned, and so room is made for another. It is said that over eighty thousand have thus been disposed of in this one cemetery.

Mr. Knickerbocker led the way directly to the narrow house which contained the remains of the idol of the volunteers of Cuba, that we might see the outrage for which eight young lives had been blotted out, and a number of others still languish in chains, and wear out the dreary days in hardest toil under a tropical sun. Oh, what must be the anguish of those boys' parents who but too tenderly reared them; when they lie down to sleep and when they awaken in the morning, if indeed they can even sleep, and think of

the situation of those they so much love? Think of it, you who know the yearnings of parental love, and you will not withhold your sympathy.

If the blood had boiled with indignation when contemplating the scene of the bloody tragedy, we were fairly struck dumb when we saw before us the offense for which the boys had suffered. They had died for desecrating a tomb, and we expected to see some real outrage — some demolition which must shock the feelings of the living, and tend to bring reproach upon the memory of the dead. Now all was revealed, and before our eyes. Three scratches upon a piece of plate glass about twenty by twenty-four inches in size. One scratch was about fifteen inches long in a slightly curved vertical line, with a short loop at the bottom. Another ten inches long, commencing near the top of the first and descending in a curved line at an angle of forty-five degrees; and the third, five inches long, projected from the upper side of the second and about three inches from its upper end. This was also a curved line in nearly a horizontal direction, — and this was all! There was no design, no idea in these marks. Their form and extent show that they were merely for the purpose of marking and nothing more. It is said, however, that in addition to this some filth or dirt was put upon the walls of the tomb. This is the full extent of the offending, and for this the boys were shot.

They were students in a college close by. While it was an act to be severely censured, no matter whose remains might have there reposed, in no other country since the dawn of civilization, would it have been considered worthy of death; and yet I met one man, — I blush that he ever learned to speak the English language, — who, without professing to justify or palliate the bloody deed, showed in his heart a desire to do so. "Why," said he, "suppose the same outrage was perpetrated upon the tomb of Mr. Lincoln, whose memory you love, and whose virtues you revere, would not your whole nation cry out for vengeance, and not be ap-

peased until the blood of the offender atoned for the desecration?" I told him, no; that we should feel our sensibilities outraged, no doubt, and should think it the duty of their teachers or parents to punish the boys, and that, perhaps, severely; but that not an individual could be found throughout the whole nation who would not be ready to rise up in arms to prevent the shedding of their blood for such an offense, which, after all, appeared to be rather thoughtlessness than a malicious outrage. "Besides," said I, "after they had been tried and acquitted in a civil court, they were again seized by the volunteers, dragged before a drum-head court-martial of volunteer officers, where they were tried, convicted, and condemned in defiance of all legal forms, though at most they were guilty of but a civil offense, if guilty at all, of which the civil tribunals alone had cognizance, and whose judgment of acquittal should have been conclusive."

"That all may be true," said he, "but then there are offenses for which the public sentiment requires the forms of civil law to be dispensed with, and a tribunal resorted to which is not tied down by legal technicalities. Whether this be such a case or not, we will not now discuss, but that there may be such cases I may refer you to the trial and execution of Mrs. Surrat and her associates." I made no reply.

For a long time we looked sadly and silently upon these slight marks which had served as the signature of the death warrant, the execution of which so soon followed, nor could we refrain from picturing to ourselves the anguish of the mother of the youth whose hand had traced the marks with a diamond in a ring which she had a few days before presented him as a mark of her affection, and an approval of his good conduct. And there, too, we recalled the many anecdotes we had heard of the incidents connected with the sanguinary affair. After all, sympathy for the bereaved parents even dominated over the feeling of compassion for the youths themselves, for the anguish of those must still continue, while the sufferings of these were quickly termi-

nated. When will that mother forget to mourn in unspeakable grief for her son, but fourteen years of age, who, passing from prison to the place of execution, asked and was denied by the savages the one final gift of his mother's kiss and blessing?

I am prepared to believe what is asserted by their friends, that this execution was not in conformity to the wishes of a large majority of the volunteers, but that they deeply sorrowed at what they deemed a sort of necessity, or had not the courage to prevent, — that there were among them a few turbulent spirits whose violence ruled the rest, and whose cry for blood silenced the voices of the more compassionate. Again, it had come to their ears that the civil governor, in whose hands was the supreme control in the absence of the captain general, had agreed to pardon the youths in consideration of two millions of dollars, to be paid by their parents, who are among the most wealthy upon the island, and that in order to balk him in this speculation, more than from a real desire for the blood of the victims, they threatened to tear him in pieces if he attempted to carry out his part of t e contract, and thus entitle himself to the blood money. There is strong reason to believe that such an arrangement had been concluded, and would have been carried out by the venal governor but for threats that he dared not disregard, and I am willing to hope that even the turbulent portion of the volunteers would have acquiesced in the pardon had it not involved such monstrous corruption. Had the money been coming to themselves instead of the corrupt governor, they might probably have been more placable. The captain general claims that he would have prevented the execution had he been there at the time. Why then does he not pardon those who are still suffering imprisonment and chains for the same cause, and by the sentence of the same court-martial, composed of the officers of the same volunteers, by whose will he is retained in his place in defiance of the real wishes of the home government?

But I have occupied too much of your time with this sad subject, which is so well calculated to sound the deepest feelings of the human heart. We have lingered too long in the city of the dead, whose very atmosphere is now loaded more than ever with sadness and sorrow. Let us hasten away, and, if possible, forget our melancholy in a visit to the Gardens of Acclimation, which are but a short mile distant. I am, however, too sad to describe the bright roses and brilliant flowers, which there bloom in perpetual spring, but ask you to sit down with me, and for a moment rest upon the rustic seats under the broad-leafed palms, which in long lines border the walks and avenues. Here we breathe a sweeter fragrance, and would gladly forget that sickness, sorrow, and death are all around us, and shut our eyes to cruelty and oppression which so sorely afflicts a land so lovely.

X.

THE CURRENCY IN CUBA.—TAKING LEAVE OF THE HAVANA.—A CLOSE CALCULATION.—IN THE GULF OF MEXICO.—A CHARMING SAIL.

Before taking our final leave of this beautiful island, where spring-time and harvest reign perpetually, where japonicas and roses continually smile on every side, and where ever-blooming flowers load the air with a balmy fragrance, rendering the place a fit abode for angelic innocence, let us forget the many charms which nature here provides, and descend to the groveling consideration of finance, for to this at last must all come in this, as in all other lands where travelers go.

Before leaving New Orleans we had provided ourselves with a limited amount of gold, supposing that this was the circulating medium here, as in most other foreign countries. Even before landing, however, the error was corrected. Gold is only required when dealing with officers for passport purposes, and even for this I presume they would be

required to take Spanish currency, which is issued by the government in unknown quantities, without provision for its redemption in gold. This, together with greenbacks, constitutes the general circulating medium of the country, while the latter among the money-changers is worth from three to five per cent. more than the former. I gave New York exchange in payment of our passage home, and was surprised when the change was made to find I was allowed three and one-half per cent. premium on it. Thinking this was a pretty good thing which it might be well to follow up a little, I inquired if they could take a few hundred more at the same rate, and was answered they would be happy to do so; but was surprised, when the proceeds came, to find before me a stock of Spanish currency, the bills of which are twice the size of greenbacks. I at once intimated that I would prefer the latter, but was told they could give no premium if they gave me that. I took what I thought I should use there in the currency of the place, and the rest in our own currency. In paying your hotel bills or in shopping generally both pass at par; although at one store they declined greenbacks and demanded their own currency, but I thought they looked a little blank when that was produced, and I have no doubt it was a sharp dodge to get the greenbacks at a discount. I afterwards learned that some of my friends had sold New York exchange at five per cent. for the local currency, which somehow had a tendency to abate my enthusiastic admiration for the honesty and liberality at the office where they had allowed me three and a half. So let me advise you when you come to Cuba to fill your pockets with New York exchange (that on the Chemical Bank is much sought for), go everywhere till you get the best price paid for it, and depend entirely on the Spanish currency for your expenditures there, unless, indeed, before that time this paper shall "go up in a balloon." As formerly stated, small change is in American dimes, of which you are liable to have forty or fifty poked at you at

once. I believe I could have brought away a peck, obtained as change for paper money, and I am surprised that some Yankee does not resort to this means to diminish the burden of inevitable expenses here.

Friday was a busy day. It was our last in Cuba, and many interesting sights were as yet unseen. State-rooms had been selected and passages taken; passports had been properly *viséd* at twenty-five cents each to allow us to depart, and left at the ship's agency, for the agent had to furnish to the authorities a list of the passengers, with their passports, which were taken on board the ship by an official, who, after seeing that none else came on board, left them with the purser, and he returned them to us when he took up our tickets. So it is you may get away from Cuba.

We were informed at the office that the anchor would be up at five o'clock sharp, and we had directed Angeleno to have us on board at least half an hour before that time. Before three o'clock he took away the baggage, promising to return for us directly; but we had to wait impatiently for three quarters of an hour, all ready for the start. Then he came bustling in, gathered up the hand packages, and we followed him out into the hot sun, expecting to find cabs at the door to take us to the dock where we had landed. But no, he led the way to the extreme lower end of the dock, involving a walk of two hundred yards in the heat of the day, which enabled him to pocket the cab money. However, there was no help for it. So we seated ourselves as quickly as possible in the large boat, already well filled with our trunks, and pushed off. The tide was running out strong and a smart breeze was blowing down the bay, and there were but two oars to pull us against wind and tide. Our master seated himself at the stern, took the tiller, and ran us along as close to the shipping as possible, to break the force of wind and tide, but with all this it required a double range on shore to prove that we moved at all. Away out in the bay we saw the smoke rolling from the stack of

the "Havana," for that was the name of our ship, and it already became doubtful whether we could make the distance by the time appointed, and we knew she could not delay much beyond that time, for she must be in the open waters before sunset. Involuntarily each one began to consult his watch, and muttered complaints began to reach Angeleno's ears, who might have saved half the distance by taking us in cabs to the Derrick Dock. He bawled away in Spanish to the men at the oars, but our ignorance relieved us from whatever there may have been of profanity in his discourse. The men did their best, and we crept slowly along, not in the direction of the ship, but close along the shore, for a full hour, when we had attained a position abreast the ship, which was still half a mile distant; and now it wanted but ten minutes of five, and we were almost in despair and ready to drown all, both Jews and Gentiles, on whom we could lay our hands. Our dark-eyed pilot, however, was master of the situation and showed but little excitement. He gave a quick, sharp order; the men dropped the oars, sprang to the mast and shook out the sail, while he put the helm hard-a-port. In an instant we were dashing away at a spanking rate, with a fresh beam wind, straight for the ship. The water foamed and boiled at the bow, while the open boat careened over so as almost to dip the water, while all involuntarily worked over to the weather side as far as possible. By five o'clock we shot along-side of the lowered steps, where were both the captain and purser ready to receive us. We were the last on board, and they had been some time awaiting us. Soon the baggage was hoisted aboard; the cry of "All ashore" sent those who had lingered to take a last farewell of their friends down the ladder to their boats. The officer, whose business was to see that none left unlawfully, jumped into his boat and shoved off, with a graceful adieu. The sailors were heaving up the anchor, and in another minute the jingle of the bell told the engineer to let on the steam, the jib was run up to help

bring her around upon her course, and we were presently threading our way among the shipping, under moderate steam, almost before the echoes of our parting salute had died away. As we glided past the monitor, our friends on the quarter deck waved their handkerchiefs as a parting salute, and just as the sun was setting beyond the island which we were now leaving, probably for the last time, we shot by the Moro Castle, whose frowning battlements overlook the narrow entrance to the bay, and found ourselves upon the gently undulating surface of the Gulf of Mexico. It was a soothing sight in the soft light of the approaching evening to watch the receding city, the castle, and the eastward hills, and the different parties among the passengers gathered in little groups upon the quarter deck enjoying it to the full. There was no wind to stir the waters; there was no cloud to obscure the stars, as one by one they came out from their screen of light, where they had hid themselves by day, and now benignly looked down upon us. There was only that long, swinging motion of the ship, which is never absent when on the open waters of the ocean or the Gulf.

After supper we all went to the open deck, over which an awning had been stretched to keep off the heavy dew. No one would have changed the temperature one way or the other had he had the power. The air was sweet and soft and balmy, as we have it in the months of May and June, while the salt water — we were now on the saltest ocean water in the known world — seemed to impart to it a stimulating or invigorating influence necessarily wanting on the plains. It really seemed a great luxury, like a hearty drink by a thirsty man, to inflate the lungs to their utmost capacity and retaining the air to absorb its life-giving elements.

Gradually the eastern horizon became illuminated and presently a bright streak of light appeared above the waters, which rapidly enlarged till the whole moon (then one day past maturity) seemed to lift herself above the waves and throw her mellow light upon us. It was a delicious evening,

so mild, so soft, and yet so invigorating; and is it strange if for the moment we felt some regret at leaving so soon and setting our faces towards that north where so many of our friends were shivering in the pinching cold? But then, when some one spoke of this, I told them of the jingling of the merry bells along the streets, the swift gliding of the cutter along the snowy track, of the jolly times the school-boys have in games at snow-ball or tumbling in the drifts, and of the curleycues cut upon the ice in skating.

As the moon slowly rose above the waters her reflected rays tipped with light the tops of the undulations of the sea, which gradually lengthened as she rose higher, till from the verge of the horizon and to our very feet a broad silver mantle seemed spread out before us, covering some great living thing beneath, whose disquiet seemed to keep it ever agitated.

It was late that night before we retired to the narrow bunks, which at the best are not comfortable on ship-board, but it was with the assurance that we should wake up in Key West, where we were due the next morning.

XI.

KEY WEST. — THE WRECKERS. — SPONGE FISHING. — THE TOWN. — THE MANILA PLANT. — A ROUGH SUNDAY. — AN ANGRY SEA.

About four o'clock in the morning I was awakened by the bustle and uproar of getting the ship to the wharf. I felt like wringing the rascal's neck who, just opposite my window, having no regard for the comfort of a sleepy man, kept up an unearthly yelling in every imaginable key from the scream of the coyote to the bellow of a buffalo bull. At last, however, either from exhaustion or because the work was done, the uproar ceased, and I again composed myself to rest and slept soundly till the bright rays of the sun awaked me. I made a hasty toilet and turned out to get

a first view of Key West, the extreme southern point of our national domain — the most noted of the Florida Keys (or islands), jutting far out into the Gulf of Mexico, surrounded by the treacherous coral reefs, just below the surface of the waters, which are the dread of mariners, the destruction of more ships, and the death of more seamen than any other navigable waters in the world. The stories of the wreckers of the Keys, which have filled so many pages of the monthlies, have thrown about these shores a romance which brightens one's desire to see them, and prepares one to behold in the inhabitants a sort of amphibious beings, half philanthropists and half pirates, who will expose their own lives most recklessly to save the life of the shipwrecked sailor and tenderly care for all his wants, and then rob him of all he has to pay themselves. How much there may be of truth, and how much of fiction in these romantic stories which you have so often read, I cannot say. Certain it is that I received the same contradictory reports in regard to these hardy men in my personal inquiries of those who know them.

There is no agriculture on these sand-clad islands, so that the main resource for subsistence for the producing class is fishing and wrecking. One large branch of industry is sponge fishing. The sponge fishermen go in parties of three or four in little, light-draft sloops or schooners of a few tons burden, and are absent on their excursions generally several weeks. They know every reef, every channel, and every little nook of safety, where the most and best sponges grow, and what waters are most frequented by the various kinds of fish. The sponges are found in deep water, and are detached from the rocks by means of long rakes or tongs, but this can only be done when the water is still enough to enable them to be seen. Every night they are taken on shore, firmly strung together, and placed in a position where they are alternately washed by the surf and dried by the sun. By this process the sponge fish dies, decays, and is washed out, and his house,

no longer tenanted, is bleached and prepared as we see it in the shops for sale. Like all other fishermen, the sponge-fishers sometimes have good luck and sometimes poor. If a wreck occurs in sight during these excursions, then the fishermen instantly become wreckers. Like all other classes of the human family, no doubt, some are good and some are bad. Hence the contradictory reports we receive of them.

My first glance on gaining the deck was to seaward, to look for wrecks, and sure enough there they were — several right within the bay, and some not half a mile from the wharf. I next took a stroll on shore for a short walk before breakfast. The sky was cloudless, and already the heat of the sun would have been uncomfortable but for a nice breeze which came in from the south and fanned us into comfort. After breakfast we all went on shore, with injunctions from the captain to be on board by nine o'clock, as he should sail at that time.

I was disappointed at finding the town of Key West so pleasant a place. The streets are broad and in good order, the houses neat and comfortable, the yards ornamented with flowers and shrubs, and to a considerable extent shaded with palms, and altogether there is apparent much more vegetable life than one could expect on that coral rock, lightly covered with sand. We visited the telegraph office, which is in the government building, or custom-house, the stores, the hotels, the curiosity shops, the store-houses, and the observatory, and received the most courteous attention on all sides. We saw none of those rough characters which the stories of the wreckers had prepared us to expect, and on the whole were most favorably impressed with Key West and its inhabitants.

In a warehouse near our wharf I saw for the first time the plant from which our manila ropes are made. It is a species of the century plant, with leaves from two to four feet long; these seem to be composed of the strong fibre massed with succulent pulp, which gives the leaf form and

consistency. This lot was gathered from a neighboring Key, where the quantity is quite limited, for the purpose of enabling some inventor to test a new machine for separating the fibre from the pulp. While I was inspecting it a negro came along, who had a rebellious cur in charge that manifested a great desire to leave him. He picked up a leaf that had been trodden under foot till the fibre had become partially disengaged, which he tore into strips, tied them together, and so made a thong, with which he secured the fractious pup; and I have no doubt he could have hung the dog or himself with it had he been so disposed. I brought away a specimen of the manila plant. As we were about to sail an order came from the custom-house that all our baggage must be examined before we could proceed. It took till twelve o'clock to convince the collector that this vexatious proceeding was unnecessary, as the same thing would have to be again done on landing at our several destinations. At last we got off and took a westerly course towards the Northwest Pass, which afforded twelve feet of water at that state of the tide, while we drew but ten. The day was very beautiful. A cloudless sky and a bright sun might have made it uncomfortably warm but for the apparent current of air occasioned by the progress of the ship. We passed along the channels among the coral reefs surrounding us on every side, but unseen, as if upon the open ocean; only away in the distance on either hand low islands could be seen here and there on the verge of the horizon. Buoys marked our way till we had cleared the Pass and were in the open waters of the Gulf.

After dinner a gentle breeze came up from the south, just enough to carry the smoke ahead of us, but still the sea was smooth, and we glided along almost as quietly as if in a canal, and so the captain predicted we should have it all the way. But he was mistaken. Although the wind continued light from the south, the waters became troubled by four o'clock, and in half an hour more the ship was wallow-

ing in the waves that came rolling up from the west, and these kept increasing more and more in magnitude. In the trough of these big seas the ship acquired a rolling motion more trying to the sensitive stomach than the plunging in a gale of wind. We were running right away from what little wind there was, so no sail could be set to steady her, and thus unbridled she swung fearfully. A rough sea in smooth weather; an apparent storm, but without wind. The captain said we were feeling the effects of a storm which was raging far to the west of us; and as there was a stretch of water for seven hundred miles in that direction, there was room enough for disturbance, but he had no fear that the storm would actually reach us; still I noticed our course was changed two points more to the west, evidently to secure more sea-room in case of trouble. The impulse of a landsman is to seek the land in case of danger, while it is the greatest dread the sailor has in a raging storm. Most of the ladies, and many of the gentlemen, went to their berths, and thenceforth during that voyage made very little inroads upon the ship's stores.

So it ran all night long, and so it was in the morning. Great rollers came marching on with a majesty and power almost appalling. They would stoop under the port side of the ship, roll her over, and lift her high up into the air, and then slip out and drop her down till one would think she would never stop until she reached the very bottom, and presently another would glide under her again and lift her away up high, again to let her fall, and so on continually. Generally three big waves would come together, one right behind the other, succeeded by an interval of smaller ones, more broken and irregular, when the ship would ride more easily. It was interesting to watch the coming of these big seas, and observe the effect when they reached the ship. So wore away the morning, the wind still very light and soft.

Bishop Young, of Florida, had come on board at Key

West, and we had hoped to attend his service on board that day. But all the prayers he said that day were silent ones, and his preaching was only by example. Indeed, no one seemed to remember that it was Sunday.

Towards noon the weather thickened rapidly in the west and north, and the captain told me quietly that we were bound to have a norther; that in a few minutes the wind would come from the west, but that it would immediately come in from the north, and might blow pretty strong, but that everything was snug and ready. Almost while he was speaking, what he predicted came to pass.

We had already passed Tampa Bay and had seen the light-house on the outside island. But it was perhaps eight miles off, and was only in sight for a short time. The coast of Florida is so low that it can be seen but a short distance at sea. Had it been as high as almost any other sea-coast it would undoubtedly have been in sight the whole way. As it was, the open waters were as unbroken to the view east as to the west, save at this one point near Tampa Bay.

The north wind was cold and chilly, sharply contrasting with the temperature of yesterday, or even this morning, and we felt the change severely. Shawls and overcoats were unpacked and brought into requisition, and all who were not laid up gathered around the steam-pipes with which the cabin was warmed. The wind was strong, but not a gale. To one at sea for the first time it would have seemed a hurricane, and he would have thought that nothing made of wood and iron could have stood the strain to which the ship was subjected, but in truth it was not very severe. The effect of the strong north wind upon the big waves rolling in from the west was at first quite curious. It seemed to break their backs and chop them up into sections, almost like great hay-cocks, and these twisted the ship about into curious contortions. But this did not last long. So soon as it beat the old waves down to prepare for its

own legitimate work, it got up a sea of its own, which came tumbling down upon us from almost dead ahead. If they were not as large as those we had been wallowing in for the last twenty-four hours, they seemed more spiteful, and struck the ship right in the face in an angry way, as if they really meant mischief. The others did not often break at the crest, while every one of these was covered with a white, curling foam, as if they would engulf whatever should oppose them. Before night some had assumed a magnitude and force which made everything tremble when they struck us, though but very little water ever reached the deck. As we were running perhaps eight miles an hour against the wind, to that extent its apparent force was augmented, so that what was but a good stiff breeze appeared to be a raging storm, which whistled through the rigging and howled around the ship like a band of very fiends.

Had all gone prosperous we would have been in sight of the light-house on Sea Horse Key before dark; but for the last thirty hours we had been put back about three miles an hour, so the captain said, and now, when night closed in, we had seventy miles or more of angry sea before us. The invalids would often ask: "How much longer is this to last? When shall we ever get to land again?" But even these questions came faint and feeble, as if the poor things had almost ceased to hope or care. Such scenes as these are almost as painful to those who are not seasick, but try in vain to encourage or to help the sufferers, as to those who suffer the dreadful nausea.

When weary with watching by the sick, to whom no relief was possible, and then weary of staggering about the deck or skulking in the lee of the pilot-house and looking at the foaming sea, whose milky whiteness seemed magnified by the light of the rising moon as it mounted higher and higher, and often peeped through the broken clouds as if to note how the battle raged, I crawled into that narrow upper shelf which had been assigned to me to sleep in, but

it was a long, long time before I slept. While I apprehended no real danger, — while my judgment told me that there was really nothing to fear, — one could not help sometimes thinking that it was a bad night for a fire, and then the mind, without bidding, would go off home and think of the loved ones who had there been left. Then a lurch of the ship would oblige one to grasp firmly the frame of the bunk to prevent being pitched some six feet to the floor beneath. And then the danger of such an accident changed the current of thought, but failed to produce a somniferous effect.

As I took little note of time, how long this lasted I cannot say. I slept at last, I know, but indeed I cannot remember when I went to sleep. But sleep I know I did, in spite of the rolling ship and howling winds and surging seas. I will insist to the very last that I had a good sound sleep.

XII.

AGROUND NEAR SEA HORSE KEY. — ON THE WATCH FOR RELIEF. — LANDED AT CEDAR KEYS. — ROAST OYSTERS.

When I awoke it was still dark, but the ship was quiet, except an occasional dull thud when a wave would for an instant raise her up a little and then drop her down upon the bottom. Then I knew we were aground; and for an instant I felt alarmed, for I knew the ship could not live an hour on a lee shore in such a sea as we had last night, if that were still raging. I listened and considered. The wind was still howling as angrily as ever, but there was no evidence of those great seas, which I so much feared, but only ripples in comparison, whose rage was impotent; whose utmost might could only lift the ship a little now and then, but could do no harm. At once I comprehended the situation. A year before I had gone into Cedar Keys and carefully studied the approaches. On Sea Horse Key is the

light-house, which is six miles from the town and landing, and from the lower bar is approached by a very tortuous channel. From the westerly end of Sea Horse Key a coral reef extends out to sea in a southwest direction some six miles, and the only approach is on the east side of the reef, where there is plenty of water till within two miles of Sea Horse Key, when it shoals to nine and a half feet in extreme low tide. It was clear, then, that we had attempted to run in over this shoal and had grounded, but were in no more danger from the sea without than if lying within a canal, for the coral reef, not two miles off, although submerged at low tide, was a complete protection against that sea and wind. I explained all this to the lady in the pew below me, and we contentedly resigned ourselves to sleep again.

Nearly all slept a little late that morning, but when we came together in the cabin all seemed refreshed, cheerful, and happy. If some felt the remnant of their sickness still, the consciousness of perfect safety, which they did not feel the night before, made ample amends. The view from deck was quite worth a study. Two miles ahead was Sea Horse Key, a high, pretty place covered with palms; but the grandest sight of all was the line of breakers on the coral reef, which served as our protection. The seas would come racing on from the north as if mad, to strike and overwhelm us, till they reached the reef, where they would burst with a great roar, spitefully jerk a great mass of water high into the air, and then dissolve into a mountain of foam, the long line of which, stretching away out to sea, marked the place of shallow water. The words, "Here shall thy proud waves be stayed," I doubt not occurred to every one who looked upon that scene, for their sublime import seemed to come home to me more than ever before.

On our right, four or five miles distant, was Snake Key, covered also with palms, and presenting a green and fresh appearance; and away to the right of this were the seal-

traps, which appeared in the shallow water like houses on an unbroken plain. Six or eight miles away to the north-east was the town in full view, except that every object was badly distorted by the mirage.

We breakfasted with most of the passengers at the table, though a number looked pale and worn by the late severe trial to which they had been subjected. An hour or two after breakfast was pleasantly passed scanning every object within range of vision with our glasses. But at length even the novelty of that wore away, and we only looked with longing eyes at the distant town. The captain hoped that the wind would abate so that something could come out and relieve us towards evening, even if he should not be able to get off and pass the shoal at high tide, which would occur about four P. M.

After dinner we began watching the tide, for in that was our only hope of liberation for that day at least, for the wind continued to blow with unabated violence, and put the thought of the small boats out of the question. Steam was kept up and the paddles slowly backed, and at a quarter before four the ship moved. She was backed down into deep water for half a mile, and then, at the right moment, shot ahead in the deepest channel; when she passed the place where she had laid for the past twelve hours our hopes grew high. But alas! they lasted a moment only. In less than two lengths more she was as hard aground as ever, and as the tide was then at the highest, all hope of escape for the present at least was gone. "The truth is," the captain said, "this north wind has blown all the water off the coast, and I can't help it." An anchor was taken to windward to hold the ship from being forced by the wind into more shallow water. The passengers returned to the warm cabin and amused themselves as best they could.

Towards evening the wind did abate considerably, and just at dusk a boat was seen making towards us with some difficulty, but she finally reached the ship, the men nearly

exhausted. Had they been ten minutes later, the captain expressed the opinion that they must have been blown out into the Gulf, for almost the instant they got on board the wind freshened again and blew as hard as it had before. The new arrivals were two gentlemen of color and revenue officers, who had been sent by the collector to watch the ship during the night and prevent smuggling. They were of that class who might have been got to sleep, and thus kept quiet until morning, but I saw no evidence of an intention to land anything, even had the weather permitted, which, however, superseded the necessity of careful watching.

In the morning the wind had very much abated, but it still blew fresh. When I came on deck the captain pointed out an object, perhaps three miles distant, which he recognized as a little schooner, that had got ashore, no doubt, trying to come to our relief. Bad luck again, but he said possibly she might get off and still come on, especially as the wind was evidently falling. You may well believe she was closely watched, and through the glasses we could see her crew were hard at work. At last we saw she was afloat, and then she pulled away and came down like a race-horse, with the wind on her starboard quarter, and by ten o'clock was along-side. She reported as having been sent by our agent on shore. Now all felt jubilant; all was activity and bustle. Trunks were passed out and filled the hold, and then covered the deck, but she took them all. So soon as that was done the most anxious passengers tumbled on board and clambered upon the pile of trunks, and so about a dozen were disposed of, much to the relief of those who were left behind to go in the life-boat. She immediately commenced her homeward journey, beating up against the wind.

Next came the largest life-boat in charge of the purser, with four men at the oars. The captain asked me if my party would take a seat in her, to which we readily assented.

We took a short leave of Messrs. Preston and Kennedy, the young gentlemen who had formed a part of our family so long, and whom we had found such pleasant companions, for they were going on to New Orleans in the ship. I have heard from these gentlemen since not only by letter, but through a fellow-passenger who went with them. When one day out from Cedar Keys they encountered a hurricane. The captain first tried to put into Pensacola, but failed in the attempt, and dared not repeat it. The peril was great for two days, during which they could take no observations. When the storm abated they found themselves off the coast of Texas, one hundred and eighty miles beyond the mouth of the Mississippi. They think they have had enough of the sea for the present.

The wind had so subsided as to make the boats perfectly safe. Our men pulled lustily, and in less than a mile we passed the schooner, near enough to give our friends on board, who expected to be the first on shore, a good shake of handkerchiefs. The captain gave us chase in the other life-boat and gained upon us, although another passenger and myself helped at the oars, but in attempting to cut off a bend which we had gone round he mistook the ground, and we beat him in by more than half a mile. The excitement of a boat race was a fine termination of a voyage which had not been without its vexations and unpleasant features. About one o'clock we clambered upon the wharf at Cedar Keys, and were truly thankful to find ourselves once more on *terra firma*.

Our three hours' pull in the fresh north wind, so cool as to make overcoats comfortable, had given us sharp appetites, and as soon as the inspection of our luggage was over, which was neither too lax nor unreasonably strict, we made our way to the Gulf House, over the long pier and down upon the sandy road in single file, with satchels and bundles in our hands.

If the fame of the oysters of Cedar Keys has not reached

your ears, then is your ignorance to be pitied. If you have never heard of the luxuries of the trout that are caught in such profuse abundance, then your piscatorial knowledge is far behind the age you live in. When there a year before I had learned their merits, and all on board the ship who could claim a knowledge on the subject vied with each other in inventing phrases of laudation, which should make the uninitiated stare, and the mouths of all water.

No sooner was I in the house than I made my way to the kitchen, and directly a darkey was trotting down to the oyster house with a large pail in his hand, and I followed close behind to see that none but the largest and fattest were opened, congratulating myself upon the commendation my care and forethought would receive when dinner should be commenced. Vain man! As I was making my way leisurely up from the oyster house to the Gulf House, I saw Turner parading towards the snow-white beach with two or three gentlemen of the place, followed by all the passengers romping through the sand like children just let out from school. At the same time a cart came tearing around to the oyster house, and in a trice a barrel of the bivalves was loaded on, and away it went to a great pile of timber which had been gathered from a wreck, and by some flood had been hurled together with a great lot of drift. Another cart now came with a load of wood and another with an old broken fire-pan, taken, no doubt, long ago, from some wrecked steamer. It was the nicest thing for roasting oysters on I ever saw. It was an iron plate two feet wide and four feet long, perforated everywhere with half inch holes, and elevated twenty inches from the ground. About this time also came from a neighboring grocery a great basket of crackers and condiments of various kinds; and last, if not least, there came a tin gallon measure full of excellent sherry which was placed within reaching distance on the end of a log hard by. For a moment I looked sadly on these hasty preparations, for they dashed to the sand at

once all my hopes of showing hospitality where I had looked upon the ground as almost my own; and here I was fairly beaten, — yes, far more than distanced, by one who had never seen the place before, and all he knew of Cedar Keys' system was at second hand. The quiet twinkle of his eye told how complete he felt his triumph, and how much he enjoyed it. I surrendered at discretion, and subsided into a quiet guest, consoling myself with the reflection, "Let the cobbler stick to his last."

That was a gay and festive throng, surely, that day gathered upon the pile of old drift-wood strewn upon the clean, white sand at Cedar Keys. A babel of voices pitched in every imaginable key — the flow of wit and humor — the quick repartee — the loud laugh, and snatches of wild wood song, echoed back from the old pine forests as of yore they sent back the untamed melody, when the natives built their wigwams on that very place, long before the Spaniards found that coast and broke the charm of their untaught joys, and stained the sands with a crimson dye. But sad reflections of broken bliss — of man's cruelty to man — found no place in our thoughts that day. The hatred of wary enemies and the bloody fray were quite forgotten in our longing for the feast now just ready to begin. The pitch-pine kindling placed under the griddle flashed like tinder, and a roaring fire soon followed, and presently the iron plate was paved with the innocents that had that morning quietly reposed in the soft bed beneath the tide. A hissing sound, and then came the fragrance which can only arise from a great bed of oysters. Now voices were hushed; the loud laugh ceased. Each one sought a seat nearer the sacrificial altar, whereon were laid the victims offered up to appease voracious appetites. Mouths watered, and even tears were shed. Were they tears of pleasure or of pain? I cannot tell, but will venture the suggestion that it was the happy blending of the two.

But oysters are not the only boast of Cedar Keys. Sea

trout, black fish, sheep heads, and red snappers have helped to celebrate the fame of that noted place, and the shades of Izaak Walton would have haunted me had I passed through without a cast for some of them.

While the rest were still lingering around the festive logs, though impatient to do more harm to shell-fish, I slid away, though I must admit with no elastic step, to an old wharf, with a hook and line kindly loaned me, and for bait a piece of mullet. I soon edged up to a sociable disciple of St. Crispin, who much preferred a hook at the end of his line to a bristle. He was short of bait and I gave him some. He proposed that we both put our fish on the same string, which implied a sort of partnership, to which I readily assented. He gave me instructions as we made our casts. Long experience had made him skilled in the peculiarity of the sport. He said the north wind had driven all the fish away except the trout, and they would be scarce and shy, but that he would fool some of them sure, and so he did. Every few casts he brought one, which he would let spin through the water a few times and then land him in a quiet way, always with some words of commendation for his beauty. Our string lengthened rapidly, as I thought, though he said it was wasting time to stay when they were so scarce and sluggish. I thought I studied the art closely. I imitated the best I could every motion of my master, but somehow the finny rascals knew the difference, and almost always took his hook in preference to mine.

As the sun declined, the cold north wind, to which we were exposed on the old pier, made us chilly, and he said it would not pay to fool away one's time longer at such dull sport, so he pulled up the captives, which had been splashing in the tide below, and threw them down on the planking a little way off, to make a division of the spoils. It was a beautiful sight. There was a score of the kicking beauties, bright and silvery, speckled over with black radial spots, weighing from two to five pounds. A true trout, beyond all

doubt, almost identical in appearance with those taken in Utah Lake, except that the coppery stripe along the sides was wanting. But they were lovely to look at, and in contemplating their beauties I quite forgot the oysters of Cedar Keys. A beautiful oyster! A lovely clam! A charming lobster! A honey of a crab! These for those who make gods of their bellies. But a beautiful speckled trout charms the eye as the wild song of the forest bird charms the ear. The feast of the eye or the ear is a more elevated and ennobling pleasure than the feast of the stomach. The swine and the alligator are organized to enjoy the latter feast as much as the biped gourmand, but only he who is fashioned after the image of God himself is endowed with the faculties which enable him to enjoy all the elements of beautiful sights and sweet sounds, though these two are appreciated to a certain extent by some of the lower orders, but I must think that just in the proportion of this capacity are they elevated towards humanity.

I stood wrapped in admiration for a long time, making every subject before me a distinct study, till the impatient cordwainer could be no longer restrained, but must make the division, and be off with his share. He would have given me half, though he admitted I had not caught as many as he had, but that made no difference when gentlemen went *cahoot*. But this would have been absolute robbery, and I would not allow it. He had kept no count of our separate captures, but I had, and the truth of history compels me to say to you, though somehow I was ashamed to say it to him, that I had during the whole time taken but *two* of the fish. In many lands have I fished, and taken many kinds of fish, and, like most devotees, have always claimed some skill, but somehow that day I was dull and stupid and could not get the hang of the trout at Cedar Keys. I finally settled the division by picking up four of the fish, saying that was as many as I felt like carrying to the house. Then, thanking my late partner in business, I

laboriously made my way through the deep, yielding sand to my temporary home. So ended my feasting and my fishing at Cedar Keys.

The party was large and the hotel was small, without sufficient beds for all. Mr. and Mrs. Turner accepted an invitation to go into the country a mile and a half, where they fared sumptuously. The ladies were all turned into one room with several beds, where they had a jolly time, judging from the talking, singing, and laughter which kept the house in an uproar till near midnight. Some of the more active gentlemen filled the vacant beds up stairs; while Captain Stoddard, Doctor Gray, and myself, being young and used to roughing it, composed ourselves upon the parlor floor, where we made a good night's sleep.

Let me give one word to science. When washing in the tin basin on the back stoop in the morniug, I was delighted to see three striped pigs, about as big as woodchucks. Distinct yellow stripes extended the whole length of their sides upon the sandy ground. I inquired of a gentleman in black, who was *toting* wood into the kitchen, if striped pigs were common at Cedar Keys, and was informed that "they always did that way just when the breed was running out." I noted this interesting fact in my scientific journal as a valuable contribution to natural history. The observing traveler may always be storing up knowledge.

XIII.

THROUGH THE CENTRE OF FLORIDA. — TRUNKS ABOARD! — A SUDDEN STOP. — NO REFRESHMENTS. — *EN ROUTE* AGAIN. — THE WIDOW AND HER SIX CHILDREN. — HOW SHE WAS PROVIDED FOR. — FAREWELL.

At nine o'clock in the morning we walked through the sand to the railroad dépôt, while an old mule with pendent ears, that looked as if he had come with the first discoverers, and a dilapidated cart, brought down the baggage. At half

after nine we started. I shall attempt no detailed description of the day's journey. We were allowed seven hours to make the one hundred and five miles to Baldwin. This enabled us to stop at every station and discharge and take on freight, and still run slow for safety.

Through the centre of Florida from north to south there is an upheaval of fossiliferous rock, composed, so far as I could see, entirely of bivalves, which are shown in beautiful perfection. This seems to have served as a nucleus for the accumulation of the drifting sands on either side, and thus the peninsula has been formed, with the aid of the corals and the immense beds of shell-fish of a species mostly now extinct. Sand prevails throughout, except in the swampy sinks, where vegetable deposits, mixed with the drifting sand, have covered up the bed below. Some sugar and some long staple cotton are grown, but I cannot report the agriculture of the country as prosperous.

At half past four we arrived at Baldwin, where we had to change cars and take the Tallahassee train for Jacksonville, eighteen miles distant. Our baggage was tumbled out upon the platform where we landed. This had to be transferred some hundred feet on the other side of the dépôt, where the baggage-car of the other train would stand, where also it must be rechecked, for we were required to give up our Cedar Keys and Fernandina checks here. There were about twenty trunks in the pile, and we contented ourselves with the assurance that they would be properly transferred, till the Tallahassee train came in sight ten minutes behind time, and not half the trunks were yet moved. Mine were on the further side of the pile, and I became anxious. The train rushed up and mine still stood there. I captured and stimulated a colored gentleman with a truck and rushed round the dépôt, turned the intervening trunks out of the way and loaded mine as quickly as possible, and when we got round the corner the train was under way. It soon slackened speed, and Turner jumped to the platform and

made frantic gestures to back, which it did, and I reached the point for loading the baggage about the same time as the baggage car. At the same time the conductor jumped out and demanded excitedly who rang the bell to stop. This completed Turner's rage. He straightened himself up to about six feet six, while his natural level is not more than six feet four, and said he did it, and inquired if it was the conductor who was before him. The man replied that he was, and he would thank him to mind his own business and not interfere again with the running of his train. An explosion followed that was terrific. Turner's eyes glared like balls of fire; his voice was deep and husky as if there was not room for its escape; his face was pale and then livid in rapid succession; each individual hair of his sandy beard, which is twenty-three inches long, seemed to straighten like the quills of a porcupine and spread out like a fan; while the mustache became erect as if to enlarge the orifice of the face, and every muscle seemed to tremble with excitement. I wish I could quote that speech. It was rapid, it was fierce, it was terribly eloquent. At first the young fellow attempted to reply with spirit that he did not propose to learn his duties from him. But he was soon overborne and fairly crushed by the flow of earnest, yes, fierce, words which Turner poured upon him. He told him that he *should* learn his duties from him, that he would teach him his duties, and see that he performed them; that he was out of place till he learned his duties and was willing to perform them. The lad then lowered his tone and said he thought the trunks and passengers were all on board when he started. His instructor told him his business was not to suppose, but to know, while he had started the train without even a word of warning. It was evident the conductor now suspected him to be a railroad man, and fairly gave way, saying he had the advantage of him and he should decline further reply. The instant he yielded Turner's wrath seemed to evaporate, and even an expression of compassion took

the place of indignation, so that he made some soothing reply. I do not think the whole scene occupied more than a minute but in the mean time I had got my trunks on board, though none got checked, and stood close to my friend to meet emergencies. We jumped on board, the conductor waved his hand and again the train started, while Buchanan was dragging his trunk along and had got just even with the hind end of the hind car. He was obliged to drop it and jump on board, leaving it on the platform. This was a real episode in our journey, creating more excitement than anything that had occurred. But for the prompt action of my friend I should have been left with my trunks, while my family went on.

As soon as we started we struck a terrific pace, as though the engine itself was mad beyond control. Our rate was at least forty miles an hour. But in a few minutes, and before we had made half the distance to Jacksonville, a bump and a crash came, the speed slackened, and we went thumping over the ties and bounding up towards the ceiling in a very unpleasant manner. I sang out for all to keep their seats, which was not an easy thing to do, as I found by my own experience. I was sitting over the forward truck which seemed to be unusually disturbed. Before we had time to think much or do anything the car stopped, and we were safe, at least. On our car the breakage had been all outside, and not one within was scratched. I think all felt truly thankful for the great deliverance to that kind Providence who had watched over us during our wanderings and upheld us in many perils. An examination showed that an axle-tree of the hind truck of the baggage car had broken about five hundred yards before we stopped, a wheel had turned in upon the track, passed all the way under the smoking car, and sent it kiting to one side, and then taken to our car, in the forward truck of which it had become entangled, thrown it off and fairly wrecked it. The only actual injury done to the body of our car was to smash the

platform when we ran into the car in front, and even this was not entirely demolished. Fortunately the coupling had broken, and we were standing some distance from the balance of the wreck.

No one was injured but the baggage-man. After a while he came limping up and stated that when he found his car chasséeing around in a wild way, and the trunks tumbling about like dice at a raffle, he concluded that he had no further business there, so he evacuated. He thought his accident was a simple sprain of the ankle. An hour later I called to see him, and found it badly swollen and giving much pain. I sent for Drs. Gray and Dodd, who had been with us all the way. They soon pronounced it a dislocation of the ankle joint, and regretted that they had not been called at once, when it could have been reduced without difficulty. They tried all their strength, pulling and pressing, but to no purpose. I then tried my grip to the utmost, but only elicited groans and yells and some hard words from the patient, who said he would sooner lose the joint than suffer that way again; so we left him to take his chances when he should get to town, — Dr. Gray grumbling audibly at him for a chicken-hearted baby that could not bear the prick of a pin.

We could not have been wrecked in a safer place. We had just left a long down grade and were upon a level sandy plain, above which the track was raised but little, with shallow ditches on either side. There was no chance to overturn the cars, and loose sand is a good bed for cars or men to jump into.

We had had no dinner, except a sandwich picked up by the way; and while we were indebted to the oysters of the previous day for a poor appetite at breakfast, they had long since done their work, and we were looking forward to a supper at the St. James with hopes which were thus summarily interfered with. I started on a foraging expedition to the "White House," near by, and the only building in

sight. A very old gentleman (over eighty, he told me), whom I had seen in the cars, had got there before me, and sat shivering over the fire. The woman of the house, with half a dozen small children around her, said that she had nothing to eat but three eggs and some sweet potatoes, which she offered to cook. I told her to boil the eggs for the old gentleman, and as for the rest, we would do very well till we should get through; so I gave each of the young ones a half dime, and left them in excellent spirits.

The locomotive had been detached as soon as practicable, and sent to town for cars to take us on, and about eight o'clock we saw it coming in the distance. When it arrived we made a move in as good order as possible. It was a long way from the broken platform down to the sandy ground, and there I stationed myself to assist the ladies down. Among the last came a ten year old boy with a great box. I helped him down, when right behind him was a twelve year old girl, staggering along with a yearling baby in her arms. These also I helped down, and put the big baby in the girl's arms again, when she tumbled over the boy's box, and then some crying was done, but I was busy taking down the rest of the family. Last of all came the mother, with sundry bundles in her hands, and an infant in her arms of the same age and condition as Mrs. John Rogers's tenth child. Some one else, I think Mr. Turner, had taken charge of the girl with the baby and the boy with the box, and got them forward somewhere in the cars. As soon as I had got her and her babies and bundles upon the ground, I took a child on each arm and a bundle in each hand, and told her to follow me carefully, for it was so dark one could not see where to step. By carefully feeling our way, we finally reached the cars, and I got them safely on board and found them comfortable seats. She thanked me in a low, soft voice, which sounded as if she spoke with difficulty. I had not noticed her in the cars before the accident, but now by the lamp I saw that she and her children were very

plainly dressed, but perfectly clean and neat. She wore an old fashioned sun-bonnet, which projected over her face, almost concealing it; but as she raised her head to thank me, the light shone upon it, and I saw it was wet with tears. She anxiously looked about for her other children, but they were not in the car. I told her to be seated, and I would find them and bring them to her presently. I found them in the other car, sitting quietly alone. I took the big baby in my arms and led the way, and directly had the satisfaction of seeing the mother with her six little ones gathered around her. It forcibly reminded me of the hen gathering her chickens under her wings. By this time the attention of the others had become attracted by the little group, and it seemed as if you could breathe in the very atmosphere that an interest had been awakened in them; I think the mother must have felt it too. She leaned her head on the seat before her, and all seemed still throughout the car. At length she raised her head and looked timidly about, to see that she was the object of general observation. I then asked Mr. Corwin, of Cincinnati, and Mr. Chittenden, of New York, gentlemen of about my age, whose goodness of heart is proclaimed by each lineament of their faces, to speak to her and try and learn her troubles, for I feared she was in deep affliction. Mr. Corwin went first, and in a few minutes reported that she had lately lost her second husband, at Live Oaks, who had left her with those six children and no means of support. That in hopes to get work she had managed to get tickets to Jacksonville. That she knew not a soul there, and had not a cent of money to get a crust of bread with. Now make her's your own case — or rather your wife's — and you will not be long in concluding it pretty hard to be thus turned loose at nine o'clock of a dark night in a strange place, and among the roughs around a railroad dépôt. I immediately started a contribution, and soon raised twenty-nine dollars, but I thought it a little remarkable that not

one of those passengers who might be called way passengers could afford a cent for such a charity. When I gave it to her I told her the amount, and cautioned her to keep it where it could not be stolen, for there might be those even now on board who would rob her in a moment if they could get a chance. She took it with a trembling hand, and put it in her bosom, but she was too full to utter a word of thanks, a single sob spoke her feelings more than a thousand words. When she had composed herself, Mr. Chittenden went to counsel with her, for we felt that, stranger to the world as she was, she needed advice little less than money, and no one could be better qualified to speak wisely, as well as kindly, to her than he. She told him that she had just been praying to God most earnestly that He would, in this most trying moment, come and help her, and now He had already answered her prayer more liberally than she had dared to ask; that we had given her all she wanted or could take care of, for she had never seen so much money before at once in all her life.

Mr. Turner, who is never idle when work is to be done or good is to be accomplished, took upon himself to see that the widow and her little ones should be properly cared for when they should reach town. To this end he sought the conductor, to whom he fully explained the case, and inquired if there was any place to which he could take the woman that night, where she would be safe and comfortable. The conductor manifested an interest in the matter which made his late lecturer his fast friend for life, and I know he would go any distance to-day to serve him. He said the best thing was to get her some provisions, give her plenty of wood, and let the family remain in the car that night with the door locked, the key of which he would keep; that he would attend to all this in person the moment he had discharged his duties connected with the train, which would not take long, and that Mr. Turner should

come down in the morning and see how they were. As the car seats afforded a better bed than she and her children had ever slept in in their lives, this arrangement met Mr. Turner's approval, and it was so decided, and he took the conductor to the widow and introduced him, and explained the arrangement made, which relieved her mind of the last anxiety, at least for that night.

By the time all this was concluded we had overcome the eleven miles between White House and Jacksonville, and the whistle was sounding to notify our approach to the dépôt. As we passed out of the cars that night many, both ladies and gentlemen, warmly shook the hand of that overburdened, but now really happy, woman, of whom they had never heard a few hours before, and never expected to see again; but their wishes for her welfare were most earnest and cordial, and I have no doubt they have often thought of her since. All felt that the mite they had given for her relief was the best investment they had made in a long time, and almost felt thankful for the accident, without which this case of real want would have passed unnoticed and unrelieved.

The next morning Mr. Turner went to the dépôt to look after his charge, and found her going with the conductor to some place which he had found for her. Notwithstanding the little unpleasantness which first introduced us to that conductor, should he ever need the assistance of friends let him come to any of us.

Perhaps my readers are fatigued with accompanying us so long, over a route sometimes delightfully charming and at other times a little rough, if not dangerous. But a kind Providence has brought us safely back to our own country, for which, I trust, we are all sincerely thankful. We have seen many things together, which to me have been very interesting; and we have had many experiences together, which to me have been very pleasant; and could I have so

succeeded in presenting them as to make my readers feel for the time that they were actually with us, I do believe that they would have proved interesting and pleasant to them. At least, I hope that those who have had the kindness to follow us thus far will not look upon the time thus spent as wholly lost.

XVII.

THE YOSEMITE VALLEY AND ITS ORIGIN.

LETTER TO DR. J. W. FOSTER, 1870.

WE had completed, so far as we proposed to do this season, what may be called a coast survey of the Pacific slopes. We had sailed up the fine harbor of San Diego, and from its galleries seen the mountains of Mexico, and visited the olive orchard of the old mission, a few miles away. We had luxuriated in the orange orchard of Los Angeles, and seen the *vaqueros* lasso the wild horses on the great luxuriant plain which stretches away for twenty miles to the sea. We had inhaled the balmy air of Santa Barbara, and traversed as in a dream of delight the charming valley of San José, and rode after Fosse's fearful driving across the mountain to the famous geysers. We had repeatedly passed the Golden Gate, where the ever-heaving waters of the Pacific are subdued to the calm serenity of the bay within. We had passed up the Columbia River, and viewed with interest the sublime scenery and towering battlements which confine its course, and had seen the mad swell and giddy rush of waters of the cascades, and had passed by the falls at the Dalles, where the great river had cut its way through the level plain of basalt. We had gone up the Willamette River to that thriving new city, Portland, the capital of Oregon, and had coasted our way to Victoria, the capital of British Columbia, where we had seen the grand display of Her Majesty's whole Pacific fleet, in commemoration of the Queen's birthday, and in the evening of the day had attended the Governor's ball, in honor of the same event, and had re-

ceived an invitation to attend His Excellency's wedding, soon to come off in San Francisco, when he hoped to be united to a fair country-woman of mine, as he was pleased to express it. We had threaded our way among the thousand islands of Puget's Sound, leaving the disputed San Juan plainly in sight on our left, to Olympia, whose games are not yet instituted. We had crossed the country for fifty miles in an open farm wagon without seeing a single hour exempt from rain during the two days necessary for the journey. We had shot the rapids of the Cowlitz River in an Indian canoe, which wildly danced upon the seething water, and the white flecks of foam whirled about as we shot with giddy speed down among the raging breakers, like a swift-winged sea-bird bathing itself in the crests, or like Arion on the back of the dolphin, cutting through the foam of the white-crested seas, till we were almost drunk with the bewildering excitement, when we reached the placid waters towards the mouth of the river, where it is lost in the great Columbia.

Here we were again in San Francisco, making preparations to visit the Yosemite Valley. I had been there before, but was anxious to show it to my other and better self, and a friend had placed a young lady of his family in my charge, so our party consisted of three.

There are three routes from Stockton to the valley. One by Clark's and the Mariposa Grove of big trees, of which the last forty miles is by saddle; secondly, Coulterville, of which the last thirty miles is by saddle; and the third by Hardin's Mill, of which the last twenty-five miles was by saddle, — but I was assured that the road was now completed seven miles farther to Hodgden's. This determined us to take that route.

On Tuesday, the 12th of June, 1870, at San Francisco, we took the steamer for Stockton, at which place we arrived at evening. Early the next morning we were in the stage, and faced for the Sierras. The road was very dusty, but

we made good progress across the level plain of the San Joaquin Valley for thirty miles, and took an early dinner at Knight's Ferry, at the foot of the mountains. We then hastened across the river and commenced the ascent. In places the road was exceedingly steep and rough, where all who were able were glad to walk. In three hours we reached Chinese Camp, fifteen miles distant, when we changed stages, and pursued our journey immediately to First Garotte, twenty miles distant. Night overtook us as we were crossing a river six miles from our destination, when we commenced a fearful ascent of nearly one thousand feet in two miles. The road was dug into the side of the mountain, and was barely wide enough for a single carriage, with a few places where teams could pass each other. There was no railing to prevent us from tumbling into the fearful abyss below. However, the horses knew the road well, and I only apprehended meeting some team on the way which we could not pass. We did meet three teams, but in every instance we heard the other and waited at the broad places. We were two hours going up those two miles, and when we reached the top, and pulled up in front of a little gray shop, where the faint flickering of a sickly light told us that we had obtained the higher level of Big Oak Flats, we felt relieved and breathed more freely. The night was still and hot as well as dark. The dark night and bad road still compelled us to a slow pace. However, another hour and thirty minutes brought us to our destination, late at night, some of the party, much fatigued, preferring their bed to a cup of tea.

As we had but twenty-seven miles to make the next day, we made amends in the morning for the late hours the night before. I learned with dismay that the stage could only go to Hardin's Mills, twenty miles distant, for the new road was yet too narrow for a stage with four horses, though it was passable for two horses with a light carriage. To add that seven miles to the eighteen or twenty miles of

horseback riding was not to be thought of, so far as one of the party was concerned, if it could be avoided; so, for twenty dollars I bargained for a light carriage to follow us to the mills, and thence take us to Hodgden's. The road all the way was very passable, and we got through by four in the afternoon, in good time to select our horses and saddles for the next day's journey into the valley. The senior lady had not been on horseback for twenty-five years, and the young lady had never been in a saddle in her life.

Knowing that the travel was exceedingly steep, sometimes for long distances, especially the two miles of descent of two thousand feet when we should descend into the valley, I felt some anxiety when we started the next morning; but the ladies made the distance bravely, and reached Hutchings' about sunset. They were too much fatigued to admire the Yosemite Falls, which appeared to be right in front of us, now showing a fine volume of water from the melting snows on the high Sierras. No excursions were made the next day, which was entirely devoted to rest, and the same is true of Sunday, except that in the afternoon we walked over to the foot of the Yosemite Falls, and lingered by the way to pick a market-basket full of enormous strawberries in Hutchings' garden, which were as large and as fine as any I ever saw. On Monday morning all were in fine condition, and we mounted our horses for an excursion to the great falls of the Merced River, over which it tumbles into the valley. The first is the Vernal Falls, which has a vertical descent of three hundred and fifty feet. It was first viewed from below; but to do this the observer must stand in a continual shower of spray, which keeps everything in its vicinity, except the rocks themselves, green and fresh. On my former visit the ascent to the head of this fall had to be made by means of a rude ladder, which sometimes tried the nerves of the ladies severely, and, indeed, of gentlemen too. Now a zigzag trail was cut, which rendered it possible to ride a sure-footed mustang or mule

around the fall, and so we went to the top and thence looked down in the great chasm below into which the river plunges with a deafening roar, from which arise not only the shower of spray referred to, but myriads of larger drops of water which arise to a great height, and in the strong rays of the brilliant sunlight look like a great shower of diamonds. We then proceeded to the foot of the Nevada Fall, one mile above.

I regret that I cannot take the time to give a full description of these falls, but it may not be. They are truly wonderful and grand; we seated ourselves in front of the Nevada, and studied it for two hours, constantly discovering new features and new beauties. When the water is first seen at the top of the fall, it is white as wool, and so it continues through its entire descent of seven hundred feet, when it falls into a chasm which it has excavated for itself in the living rock to an unknown depth. Imagine an immense quantity of cotton-wool tumbled in a vast stream from the height above, and descending with incredible velocity, and you may form a faint idea of the descending flood of the Nevada Fall, except that the inner portion of the descending volume meets an obstruction about one third of the way down, from which it rebounds and shoots up a great ascending jet, which is projected through the descending foam at that point. As the water plunges into the abyss below, it carries with it large quantities of air, which being there greatly compressed, is continually exploding with loud reports, — louder than the sharp crack of a thousand rifles. Truly, it was a sublime spectacle, and we never ceased to wonder as we gazed.

Early the next morning we were in our saddles, and visited Mirror Lake before the morning breeze had arisen to ruffle its surface; and there beneath the shadow of the Half Dome, whose vertical face ascended to nearly a mile in height right above, we admired the reflection of the objects on the opposite side as perfect as from the most finished

mirror. It was a study to look at the object and then at the reflection, to see which seemed the more distinct and life-like. At ten o'clock we returned to breakfast.

In the afternoon we visited the Bridal Veil Falls. It is as beautiful as its name implies. From a great height a small stream falls in a spray, precisely resembling in appearance a sheet of lace, which was constantly wafted to and fro by a gentle breeze. Indeed it was very beautiful. Late in the afternoon we returned to dinner and made preparations for leaving on the morrow.

I forbear to describe or even to mention the other points of interest so abundant in the surroundings of this wonderful valley.

"The valley is nearly a level area, about six miles in length and from half a mile to a mile in width, sunk almost a mile in perpendicular depth below the general level of the surrounding region." [1] It is surrounded by grand walls, in some places nearly vertical, but for the most part more or less broken down, — in a few places to such an extent as to render it possible for a good climber to ascend with difficulty, — and on either side near the foot of the valley trails have been constructed, with grades averaging one thousand feet to the mile, up or down which one may ride a sure-footed horse.

To most visitors, no doubt, the question suggests itself, How was this valley made?

Professor Whitney, the learned state geologist of California, carefully studied the geology of the section in which it occurs, and has thus enjoyed greater advantage for an enlightened opinion than almost any other observer; his conclusions therefore are not to be lightly considered or too readily questioned. Hence I have with great reluctance allowed myself to be forced to the opinion that he has misconceived the mode in which the valley was formed. With diffidence I make a few suggestions in support of a theory which he has considered and rejected.

[1] Whitney's *Yosemite Guide Book*, page 57.

The theory which he has adopted is, that, by some unknown process, the material which once supported the mountain where this valley now is became displaced, and that, for the want of such support, the surface rock subsided, thus forming the valley, or chasm, as we may more properly call it. Or, to state the theory in the author's own language: "We conceive that during the process of upheaval of the Sierra, or possibly some time after that had taken place, there was at the Yosemite a subsidence of a limited area marked by lines of 'fault' or fissures crossing each other somewhat at right angles. In other and more simple language, the bottom of the valley sank down to an unknown depth owing to its support being withdrawn from underneath during some of those convulsive movements which must attend the upheaval of so extensive and elevated a chain, no matter how slow we may imagine the process to have been." [1]

Although this he considers "an event which can be absolutely proved to have occurred," I am unable to appreciate the conclusiveness of the proof which he adduces in support of the theory thus advanced. Indeed I am constrained to the conclusion that this theory is resorted to, not because of the existence of absolute affirmative proofs, but because he finds, in his estimation, conclusive evidence why no other theory which may be advanced can be true, so that at last the theory thus presented is but a *dernier ressort*. If the principal arguments in its support consist in the refutation of other theories, it would seem to be sufficient to show that the objections urged against other explanations are not well founded, and are not consistent with the known laws of matter and motion, or observed results of the application of forces to the rock.

Three other causes for the formation of the valley, as having been advanced by others, are considered by the state geologist. First, erosion by water or by ice; second, ex-

[1] Whitney's *Yosemite Guide Book*, page 85.

pansive fissures; and third, fissures resulting from flexures or folding of the strata. The objections urged to the first and the last are to my mind conclusive. The expansive fissure theory I do not think so satisfactorily disposed of. He says: "The valley is too wide to have been formed by a fissure; it is about as wide as it is deep, and if it had been originally opened as a crack, the walls must have been moved bodily away from each other, carrying the whole chain of the Sierra with them to one side or the other, or both, for the distance of half a mile. Besides, when a cliff has been thus formed, there will be no difficulty in recognizing the fact from the correspondence of the outlines of the two sides, just as when we break a stone in two the pieces must necessarily admit of being fitted together again. No correspondence of the two sides of the Yosemite can be detected, nor will the most ingenious contrivance or lateral moving suffice to bring them into anything like adaptation to each other. A square recess on one side is met on the other not by a corresponding projection but by a plain wall or by another cavity. These facts are sufficient to make the adoption of the rent or fissure theory impossible."[1] This is so if we are obliged to assume that it must have been a simple fracture where the walls on both sides remained perfect, without the loss of fragments, and have so continued to this day. But I conceive that we have no warrant for saying that such was necessarily the case, or even that it was probably so. It assumes an immutability in matter nowhere found in nature, and especially among the rocks. The earth's surface abounds with evidences of internal forces abundantly capable of producing fissures vastly more extensive than this, and we nowhere find rock of sufficient tenacity to maintain the integrity of the walls when torn asunder to the extent here supposed. Fissures are supposed to be formed by expanding forces within the terrestrial crust. These forces may act so suddenly as to

[1] Whitney's *Yosemite Guide Book*, p. 84.

amount to explosions, or so slowly that their effects are only observed by comparisons at long intervals. In either case the greater the force the greater must be the destruction of the material acted upon. Assuming a force so great as to rend asunder the mountain, producing a fissure seven miles in length, and if but the eighth of a mile wide on the surface, instead of a simple fracture leaving the walls in perfect position, I think it is not absurd or unreasonable to suppose that a compound fracture was produced destroying the integrity of the walls to a very considerable extent on either side.

The granite composing the mountain where this valley occurs, as we are informed by Mr. Whitney, and is apparent to the observation of every visitor, is cut up by faults and fissures in every direction. Whether these were formed by the contraction of the rock in cooling, or are the effects of the internal force that produced the great chasm, they equally testify to the probability of an extensive destruction of the walls of the fissure when it was opened. Indeed, the theory of the learned geologist supposes that these faults and fissures are much more extensive than they appear to be; for if the falling out of the bottom, or the removal of the support beneath at an unknown depth, could be followed by the sliding down or tumbling in of the surface of an area so limited when compared with the supposed thickness of the ground crust, we must imagine it as loose as a pile of rubble-stones; else, if it commenced sliding at all, assuming the walls to have remained intact, it must have been arrested by inequalities which had existed in the fractures on the sides of the subsiding section. Or if this section had become so disintegrated by the previous action of some tremendous force as to admit of its falling down to an unknown depth, how is it possible that the walls could have remained unaffected and maintained their integrity, even to the extent now observed? So complete a destruction of the rock as was necessary to admit the theory advanced could

not have been confined to the limited area of this valley, but must have involved the whole region, and left a mere depression in the mountain, lined with granite fragments, without definite walls or boundaries, to inspire the wonder of the world as we now see them. If constrained to admit that the bottom fell out and went to an unknown somewhere, did the walls of the bottom, too, maintain their integrity, conforming in configuration and area to the valley above. By the bottom I suppose is meant something below the granite crust, and on which it rests, and I think proof is wanting to show that that was of a material capable of falling away to some immeasurable cavern below the bottom, leaving the borders capable of sustaining the mountain above.

I think it much more consistent with well-known physical laws to suppose that by the exertion of an internal force a wide fissure was opened in the mountain, and that the walls of this fissure were *shook* — as the miners term it — so that a considerable portion of the walls on either side became disengaged and slid into the chasm. The opening thus formed must necessarily have been wedge-shaped, so that the detached rock from near the surface was arrested in its descent at the lower extremity of the opening, and filled it up to a certain extent, and prevented the chasm from closing again upon the subsidence of the force. The cross sections of such an opening must have presented the form of a triangle, very acute at the lower extremity, which would have had a tendency to close up again unless prevented in the manner supposed. The probability that the walls of the fissure near the surface would become thus disintegrated and fall into the chasm is increased from the multitude of faults and cracks which traverse the ground which forms the walls of the valley, as may now be seen by all observers. Indeed, we are first led to suspect a fissure formation from the fact that the course of the valley is transverse to the general direction of the mountain range,

which is consistent with the course of fissures as generally observed elsewhere.

I do not think that "the valley is too wide to have been formed by a fissure," if we may assume that its width was increased in the mode suggested by the sliding down of considerable quantities of rock, thus loosened and detached at the time the chasm was formed, to say nothing of the vast amount which has since become disengaged by the action of the elements, through a long course of time, which has also contributed largely to fill up the great chasm to its present level.

When we observe the extensive deposits of granite gravel, for instance, at the mouth of Indian Cañon, and also on the opposite side, between Sentinel and Cathedral Rocks, and compare the amount of rock which must have been disintegrated to produce it with that which has fallen down and still remains in masses, we are struck with the very small proportion of the latter, and so are enabled to appreciate how it is that the bottom of the valley has become so uniformly level. Nor has the filling up and leveling of the surface of the valley been entirely owing to the causes referred to; but the great amount of material which has drifted in and has been deposited there by the many streams which fall into the valley contributed very largely to produce this result.

But admitting that I am not justified in my conclusion that the edges or sides of the walls became, to a certain extent, detached and fell into the chasm at the time the fissure was formed, we may see before our eyes to-day the operation of forces which are constantly at work destroying the intensity of the walls, which some portions are much more capable of resisting than others, no doubt, but to which all must yield to a greater or less degree. For ages past these forces have been constantly at work, — even from the evening of the day when the throes of the mountain testified to the resistless force which finally tore the mountain asunder

and necessarily destroyed the conformity of the outlines of the two sides, the want of which is now urged as an evidence that it never existed and so that a fissure was never formed. Supposing that such correspondence at the time the fissure was just formed actually existed, how it is possible that any one who observes the destruction constantly going on and testified to by the gravel and masses of rock thrown from the cliffs and strewn all along their bases, should expect to find such correspondence still existing, is to me quite incomprehensible. As well might we expect to find the mountains themselves still existing, with all their sharp angles and outlines, as they were when first thrown up, and before the warring elements had worn away and washed down the fragments and filled up the valleys beneath. It seems to me that it is ignoring the effects of forces which geologists, especially, have recognized as the principal agencies which have changed the force of the earth, and brought it to its present habitable condition.

I cannot, therefore, agree with the learned state geologist, that the want of conformity of the opposite sides of the valley at the present time is "sufficient to make the adoption of the theory of a rent or fissure impossible." And yet it is this negative proof which is supposed to destroy the theory of a fissure that is principally relied upon to sustain the theory of the falling out of the bottom of the mountain, an event which is deemed thus to be absolutely proved. In contemplating the works of nature, and attempting to account for existing phenomena, the geologist, above all others, must study the effects of natural forces, and the laws by which they are governed; and if he forgets these forces for a single moment, he is liable to be led astray.

I believe that this wonderful work of nature, which is worth a journey across seas and over continents to see and study, has been formed by the elevating or expansive forces below, which rent asunder the mountain long after it had

been formed, and that none other than its present condition could have been produced by elemental agencies which must have been at work ever since the great catastrophe which produced the valley. Such, in my belief, is the true philosophy of the Yosemite Valley.

Pardon this long episode; but the object of travel, if we would make it profitable, must be to see, to study, and to understand, and in this we are much strengthened by the habit of writing down our observations and reflections.

The next morning we mounted our horses and returned by the same road over which we had gone to the valley, as far as Chinese Camp. There we turned to the north and went to Murphy's, and thence to the Calaveras Grove of Big Trees (*Sequoia gigantea*), where we spent two days, and then returned to San Francisco by way of Stockton.

XVIII.

THE PETRIFIED FOREST OF CALIFORNIA.

LETTER TO THE CHICAGO TRIBUNE, AUGUST 17, 1873.

NAPA VALLEY is one of those charming intervales which head in the mountains north of the Bay of San Francisco, and run down to its shores, ever increasing in width as they approach the salt water. This valley is many miles wide at its base, rapidly contracting as we ascend it, till at its very head we reach the celebrated watering-place, Calistoga. On either hand it is bordered by foot-hills, or low mountain ranges, which separate it from other similar valleys on the east and west. From these hills come small streams, through charming little lateral valleys, in which are found thermal and mineral springs which invite the denizens of the city to their quiet retreats. Through this valley winds a small stream called the Napa River, which, from Napa City to its mouth, is a tidal stream, and navigated by small craft at high tide, though since the opening of the railroad but few vessels disturb its waters.

On my former visits to Calistoga I had heard nothing of one of the most wonderful and interesting natural phenomena to be found in this wonderful land, situated very near the head of this valley, — the great petrified forest, — and now we determined to make it a visit, and to spend a day or two in the happy valley.

At 2 o'clock P. M. we took the steamer at San Francisco, and enjoyed a delightful sail up the bay to Vallejo, twenty miles, where we took the cars and proceeded about twenty miles farther to Napa City, where we took quarters for the

night. We spent the next forenoon driving about the town and surrounding country, and then proceeded to Calistoga, where we took possession of a nice cottage.

In a scientific view, there is no other locality in California so interesting as the Napa Valley and its immediate neighborhood. The hot springs of Calistoga have given it its celebrity. They call them springs, but they are only holes dug in the deep black vegetable deposit, which extends down to an undetermined depth, and is perfectly saturated with hot water and steam. Thrust a bar down anywhere and it will soon be heated to a high temperature. Only those trees whose roots run near the surface can live upon this deposit. Not many miles to the north, and separated from this valley by a low mountain range, are the celebrated California geysers. Surely there is a hot country underneath this region, and not very far distant, if we may judge by its frequent outcroppings. Everywhere are the indications of former volcanic activity, vital evidence of which we see still remains. Volcanic peaks and extinct craters are all around us, and so are the lava beds, of various components.

But these were not the objects which brought us here, for these I had seen and partially studied years ago. It was the *petrified forest*, lately brought to notice, which I desired to visit. My first curiosity was gratified by the examination of an artificial grotto, built up of fragments of the petrified wood, some weighing several tons, which showed the growth of the wood, the knots and curls, as distinctly as in life. The first question was, Is it lime or silica? Having no convenient test with me, I sent to the pantry for some sharp vinegar. It produced no more impression on the petrifaction than water. It was silicious, then, beyond all question. On Monday morning we took a carriage with four good horses, and made our way up the valley in an easterly direction for a mile or more, and then bore to the left up a cañon in the foot-hills, and began the ascent on the old and

long used road to the Sonoma Valley, which is separated from the Napa Valley by a mountain range of moderate altitude.

About two and a half miles farther we passed a divide six hundred feet (by aneroid barometer) above Calistoga, and then descended about one and a half miles, and brought up at the cabin of Charles Edwards, or *Petrified Charley*, as he is called for short. Charley is the owner of the petrified forest, or rather has made a homestead claim there, and lives in single blessedness on bread and bacon of his own cooking. He is a Swede by birth, has been a sailor and miner and rover generally, and has now settled down in this hard spot to make his fortune by acting as guide to visitors and selling choice specimens. He entertains travelers, too, who can sleep on a bundle of hay and enjoy his frugal fare, though he does not claim to be an inn-keeper, and pays the State no revenue for a license. Some of the party were invalids, so we drove by the door of the cabin, and as near the sights to be seen as practicable, and alighted. By this time Charley had arrived, staff in hand, with a large badge in front of a stately stove-pipe hat, inscribed "Guide."

He let down the rude bars to afford us a passage, and then led the way up the foot-path to the first petrified tree, which I found to be five hundred and eighty feet above Calistoga, and twenty-six feet above the cabin. Originally but a small portion of the upper side of this petrifaction had been exposed above the soil, though it could be traced for perhaps eighty feet by fragments and broken sections of the trunk. Twenty feet, perhaps, of the butt of the tree had been uncovered by Nature to the depth of four feet at the highest point, and Charley had uncovered by excavation, to the depth of several feet more, till he had reached a point where the diameter was thirteen feet; but he had not reached the middle, apparently, by several feet. The petrifaction was complete, except some portions of the bark, which were decayed and soft, and readily crumbled to pow-

der in the fingers. Here, in the shade of a scrub oak, the invalids remained, while I pursued the interesting search, listening to the learned dissertation of Charley upon the cause and mode of petrifactions in general, and of this in particular. He led me to about twenty of these petrified trees within the space of a few acres. Considerable portions of some had been uncovered by Nature's doings, while of others only such parts as Charley had uncovered could be seen. Nearly all were large trees, so far as we could judge. Fractures showed most of the petrifactions to be white or light-yellow, while occasionally a black streak occurred. Invariably the variations were determined by the original grain of the wood, which was always quite as distinct as it ever could have been when in life. Two trees, however, were entirely black throughout, though different portions varied in intensity of color, and these were the most exposed of any which I met. There was no difficulty in determining that the trees were the California Redwood (*Sequoia sempervirens*). The only other species of this genus now extant is the *Sequoia gigantea*, or the Big Trees, which are only found in the Sierra Nevada, and this species is still more limited in its habitat, although several fossil species of the genus *Sequoia* have been found, and one, the *Sequoia Langsdorffii*, found in the miocene tertiary of Greenland, in about latitude seventy degrees north, is very nearly, if not precisely, identical with the Redwood, which is now only found in the coast range of California, between the thirty-sixth and forty-second degrees of north latitude. Indeed, the Redwood presents no mean comparison for magnitude with its near relative, the Big Tree of the Sierras, some measuring from twenty-five to thirty feet in diameter, and one stump, seven miles from Eureka, was reported thirty-eight feet in diameter, and some have attained a height of two hundred and twenty feet. It makes excellent finishing lumber, for which it is much used in San Francisco.

Our guide had made extensive search for these petrifac-

tions, and had found them for a distance of seventeen miles in a north and south direction, and less than a mile wide, always on the westerly slope of the range of foot-hills, the apex of which we passed on our way here. Through the valley runs a small creek to the south, a few hundred feet from the guide's cabin. On the west side of this creek, he informed me, the mountain's side was of an entirely different formation to that on the east side, where the petrifactions occur.

All the petrified trees which I examined are prostrate, and all fell in a southeast direction, with no perceptible variation, and such is the case with all that Charley has found, except one in a cañon, which he pointed out a mile or more north, where the stub of one, thirty or forty feet high, still stands erect, though he thought this had once been prostrate. But he did not suggest how it had regained its erect posture.

The philosophy of this phenomenon must form the subject of reflection to all who examine this interesting field of observation, and to me it seemed not of difficult solution. The range of hills upon the western base or slope on which these petrifactions occur is composed largely of tufa, a soft sandstone, of volcanic origin, which hardens on exposure to the atmosphere.

Here then was the source of the silex which had, particle by particle, taken the place of the wood, and so gradually as to preserve with absolute perfection the original form of the wood which it had replaced.

The way I read the evidence before me was this: Here stood the great Redwood forest, perhaps on a level plain, perhaps on a declivity. Then came the great eruption, probably from these volcanic peaks and extinct craters which we see away to the east, and deposited these tufa hills which form the eastern border of the basin in which the petrifactions are found. These deposits, no doubt, closed in with the western range at some point south, thus

forming a lake of the present valley. The waters of the lake submerged this Redwood forest, and being heated by the volcanic fires, became saturated with silex from the great body of the tufa constituting the eastern and southern borders of the lake. Then commenced the process of petrifaction by dissolving away a particle of the wood, and depositing in its place a particle of silex; and so went on this great work of nature till it was finally accomplished as we now see it. This process was no doubt slow, as we ordinarily compute time, but as the geologists compute it, may not have been very extended. After the submerged trees thus standing erect had been converted to flint there came another convulsion of nature, which tore away the dam which confined the waters and allowed them to escape, changed the elevations and inclinations of the surfaces, prostrated the trees of stone, and brought down deposits in the rushing course of the escaping waters, which covered most if not all of the prostrate trees, a few of which, by the subsequent denuding process of nature, have become exposed as we now see them. I think there is abundant evidence to establish all the positions of the theory suggested. Chemists will readily recognize the fact that this petrifaction must have taken place in hot water saturated, or at least heavily charged, with silex. The evidence of former volcanic activity in this immediate neighborhood, the hot springs and geysers near by, now existing (there are many others beside these I have mentioned), indicate the source of the heat which raised the temperature of the water to the point necessary for the work, and the tufa on which it rested indicates the source of the silex which it held in solution. That the trees were prostrated after the petrifaction took place is clearly shown by the fact that they are broken into short sections, — an effect which could only have been produced by the falling of those large stone columns; and the fact that all fell in the same direction shows that all were thrown down by the same violence, and so at the same time; nearly

all being buried with drift shows that a great current of water passed over them after they were prostrate, and the subsequent washing readily served to uncover the small portions which we now see exposed. Fragments of petrified limbs may be found scattered over the surface, which, at the time the trees were prostrated, may have been thrown to a considerable distance, or they may have been moved about by the action of the waters which uncovered them.

I think it is highly probable that a careful observer might pass down this valley in which these interesting petrifactions occur, and select the place where the dam was broken away and the pent-up waters allowed to escape. But even should this evidence be wanting of the former existence of a lake of hot water, the simple fact that the petrifaction could only have taken place when the trees were submerged with hot silicious water is absolutely conclusive on that subject. The changes which must have taken place in the surface of the earth by terrestrial agitation may well have obliterated many of the evidences of the former topography of the region.

Altogether this is a most interesting region for the study of the geologist or the visit of the tourist, and I regretted exceedingly that I could not spend days in the study of these surroundings, instead of being limited to hours. I have heard of several other petrifactions in the mountain regions, but the study of the situations must develop surroundings similar to those I have just described.

After completing our examination and securing a good variety of specimens, we returned to Calistoga and took the train for San Francisco, and hastened down the beautiful Napa Valley, surrounded by a world of wild flowers of most gorgeous hues, which covered the plains on either side, and loaded the air with a rich perfume.

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